WATER RESOURCES

HEARINGS

BEFORE THE

SELECT COMMITTEE ON NATIONAL WATER RESOURCES UNITED STATES SENATE

EIGHTY-SIXTH CONGRESS

FIRST SESSION

PURSUANT TO

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WATER RESOURCES

MONDAY, DECEMBER 7, 1959

U.S. SENATE,
SELECT COMMITTEE ON NATIONAL WATER RESOURCES,
Augusta, Maine.

The select committee met at 9 a.m., pursuant to Senate Resolution 48, in room 228, the statehouse, Augusta, Maine.

Committee members present: Senators Kerr (presiding) Hart, Moss.

Also present: Senator Muskie, Congressman James Oliver.

Staff members present: Messrs. Schad and McBride.

The CHAIRMAN. For and on behalf of my colleagues on the committee, I want to express our happiness at being in Maine. We have had the opportunity of being here a few times. We are always impressed by the manifest resources, especially the wonderfully good water.

The Senate, by its resolution, created this committee to do what we regard to be an important and necessary task. Americans are becoming more and more aware not only of the tremendous growth that has occurred in the past decade but of the accelerated growth which is ahead of us in the next two decades.

When we realize that our country's population will double in probably less than 40 years, that our industrial and agricultural production will double in 20 to 25 years, and we know that there is to be a tremendous expansion of our economy, of our industrial workshops, and of our urban areas.

That expansion, of necessity, must occur where the best economic elements are to be found. It is my opinion that the areas best situated to provide good water for industrial, municipal, domestic consumption and transportation and low-cost energy fuel or its equivalent electric power will be the areas in which relatively the greatest expansion will occur.

I have learned one thing about Oklahoma. Her people are against any combine they are not in on. I find a similar attitude in every State in which I have had the opportunity to visit. The people everywhere want their areas to have the opportunity for an equal chance for growth and development in the decades ahead.

Therefore this committee has the task of finding out what the Nation's water requirements in the next two decades—and then beyond—will be, where the water is available to meet those needs, and what conservation or other measures are necessary to enable, first, the Nation, and second, individual States, to do what they appropriately can to see to it that this Nation's opportunity for economic and industrial growth and development is of the highest possible order.

I think you are very fortunately situated in this great State with tremendous resources of fresh pure water. I know that the people of

this State, mindful of that fact, are determined to see to it that their State and its people have the benefit of the best possible use of that water.

Therefore, we are glad to be here to hear the evidence of your witnesses, see at firsthand the determination on their part to move their State into the front ranks of the Nation as the Nation goes forward and have your contribution to the development of information that this committee is assembling.

We are very happy to have with us Senator Moss, of Utah. He comes from a great State whose future also is to be determined by the amount of water that can be made available to the people of that State for the development of its economy. They have learned the value of water the hard way. One of the great water lawyers of the Senate, and one of the outstanding conservationists of our country, Senator Moss, of Utah.

STATEMENT OF HON. FRANK E. MOSS, A U.S. SENATOR FROM THE STATE OF UTAH

Senator Moss. Thank you, Mr. Chairman.

I am very delighted to be here in Maine. I have only visited here briefly before, but I have greatly admired this State. I have developed a very close relationship with your Senator Muskie, so I am anxious to come and participate in the hearings here. We have been traveling throughout the United States holding hearings on water resources and the farther we travel and the more areas we enter the more it is clearly driven home that our water resources will determine our future.

So we are very, very pleased to be here and to learn from you something about your problems, something of your plans for the future, so that we may bring together in this report we will make, a comprehensive overall evaluation for the study of the Senate.

Thank you, Mr. Chairman.

The CHAIRMAN. Senator Hart, of Michigan, is likewise with us. You know the arid or semiarid West has long taught its citizens the necessity of water conservation. Only the tremendous growth in population and industrial and agricultural production have combined to bring that lesson home to the people even of the so-called humid States.

One of the finest hearings we had was in Detroit. It was gratifying and yet surprising to see there the evidences which reminded us and convinced us that the people in the Great Lakes Basin are beginning to be aware that there is a limit to their water resources, that there is a necessity for their conservation, that there is an absolute requirement that pollution not be tolerated, that to pollute water is the same as to take command of nature, as it were, and deprive the citizens of the State and of the Nation of it.

The great industrial State of Michigan is afire with determination to so use, protect, and conserve their water resources that they may move forward in the next two decades just as they have in the last two with the great growth of their industrial production and the State's economy.

Senator Hart, of Michigan.

STATEMENT OF HON. PHILIP A. HART, A U.S. SENATOR FROM THE STATE OF MICHIGAN

Senator HART. Mr. Chairman, I, too, am delighted to be here in Maine. I regret only that I spent last night in New Hampshire and I think I am the most qualified to go on the witness stand with respect to the water resources as I spent between 10 p.m. and 2 a.m. on a rainy night in both States. But I knew I did not have to get here because the case of the State of Maine would be most effectively managed by the very fine Senator who sits on my right.

I am glad to be here.

The CHAIRMAN. You referred to Senator Muskie.

Senator HART. The chairman already identified himself as a proponent of Oklahoma.

The CHAIRMAN. I will tell you. I have not seen anybody come to the Senate in many years who has made a finer impression on the Senate than Ed Muskie. A lot of fellows are there a long time before people find out they are Senators. They became aware of the fact that he was a Senator the day he got there. He has made a lot of friends for himself and his State. He made a great contribution to the U.S. Senate.

I say this to you, that all the Members of the Senate have a deep respect for your senior Senator. She is the youngest senior Senator in Washington but since she has been there longer than Ed she is your senior Senator.

But we are especially happy to know him and be here in his State. I am going to ask him to make his statement for the record and then call on the witnesses that he has to appear before us.

Senator Muskie.

STATEMENT OF HON. EDMUND S. MUSKIE, A U.S. SENATOR FROM THE STATE OF MAINE

Senator MUSKIE. Thank you, Bob.

Senator Kerr, Senator Moss, and Senator Hart.

I would like to say, first of all, that it is a pleasure for me to be in the position even ahead of the Governor of welcoming you to Maine.

Our annual average precipitation is about 40 inches. I did not think that it was necessary that it would produce such a major proportion of that while you were here. We do have our fair share of the sunshine. I hope that we can bring you back when you can get to enjoy that too.

I am not going to take too much time here at the outset to make a statement because I want the main water story to be told by these witnesses who will appear before us. But I would like to say to them that I have known these three gentlemen on my left—and you notice they are all on my left—for varying periods of time, that it has been my pleasure to work with them rather closely, all of them being on one or more of my committees over the past year.

Senator Moss and I, as you all know, spent 27 very closely knit days together in the Soviet Union, and I could not begin to accurately portray to you my admiration of the abilities of these three gentlemen as well as my personal affection for them. I am delighted that they found it possible to come to Maine.

I think this is the 21st hearing of this select committee. I know that these hearings have taken them away from their home States where, like myself, they all have an obligation and an urge to do some fence mending in this between-sessions period. However, instead they are devoting a lot of valuable time to the problems of the various States which they are visiting.

I am grateful that they are giving a portion of that very valuable time to us here in Maine.

I briefed Senator Kerr somewhat last night on what we are trying to do here in Maine in the water resources field. I have indicated to him that we have some knotty problems which most of us feel have to be worked out.

I think we all share Senator Kerr's opinion about the value of water resources and their importance to the long-range development of our State.

I am delighted that Senator Kerr has given you something of his thinking along these lines so that you may know that out of the 21 hearings and his long experience in this field, the value that he attaches to the water resources of our country. As a matter of fact, he said to the Governor last night that in his judgment the water resources of Maine are more valuable than the oil resources of Oklahoma.

I am not sure that we in Maine would not make a trade if it were possible, but at the same time I think that at long range, what he says is probably true. So I hope that these hearings today will result in stimulating the interest of Maine citizens in this very great resource which we have and that we will contribute to a resolution of the very serious problems that we face notwithstanding the quantity of water which we have.

So with that, Senator Kerr, I think, with your permission I will proceed with the list of witnesses.

The CHAIRMAN. I would like to make just one observation Senator Muskie, about oil and water.

Oil and gas are valuable resources that can become exhausted. But long after the last barrel of oil is produced and the last cubic foot of gas is burnt, the industry of this country will be powered by electric energy with reference to which the inexhaustible God-given recurring abundance of water is the indispensible ingredient.

Senator MUSKIE. Thank you, Bob.

I would like to say this to the witnesses before we begin. This committee is a very patient committee and it came up here at considerable sacrifice of time, so they want to get the maximum value out of this hearing. Therefore, I hope that you will feel free to discuss thoroughly and in as much detail as you desire the points which you want to present to this committee.

Senator MUSKIE. The first witness I would like to present to the committee is a gentleman whom I have known for many years, a gentleman whom I have tried to persuade to seek the office he now holds, some years ago, without success at that time, a gentleman who has a very keen interest in the development of the economy of Maine and a keen appreciation of the value of our great water resources.

May I present, Bob, and gentlemen of the committee, the Governor of Maine, Clinton A. Clauson.

STATEMENT OF HON. CLINTON A. CLAUSON, GOVERNOR OF THE STATE OF MAINE

Governor CLAUSON. Thank you very much.

Senator Kerr, Senator Ed, distinguished members, as Governor of the State of Maine it is a high honor for me to welcome to our statehouse the distinguished members of the Senate Select Committee on National Water Resources. I am happy indeed to cooperate in this very important study by the committee.

Water is one of the most vital of our natural resources. Human, animal, and plant life depends upon it. To catalogue its uses would be to catalogue many, many activities of living. It is certainly in the national interest and in the State interest to have maximum use of this resource by the most efficient, yet equitable, means.

Multiple use analysis and assignment on a cost-versus-benefit system has become a practical necessity, but the benefits must be viewed in more than absolute terms. For instance, recreational activities or preservation of wilderness areas, while they must be examined in the light of competitive economics, must not be dismissed summarily because competition on a purely economic basis is not provable.

On the other hand, a valid economic justification of industrial activity cannot be irrevocably denied to serve aesthetic needs in the face of incomes for living.

Probably this area of competition currently causes the deepest concern—with particular relation to pollution.

The Maine Inter-Agency Resources Committee has filed with this Senate Select Committee on National Water Resources a capsule statement covering supply, demand, and problems of the water resource. The report excluded consideration of marine waters which will be touched upon during testimony here by representatives of the Sea and Shore Fisheries Department, the Maine Port Authority and, perhaps, others. The following summary is abstracted partially from that report.

What policies are necessary to establish for the future the requisite equity among the users of water resources?

First. Complete data on the resource must be gathered in order to evaluate the extent, location, and quality available for use.

Second. The users, all users, must be educated as to the necessity of multiple use and the reasonable resolution of mutual problems.

Third. The laws of Maine should be reviewed to reassess the rights and needs of all users.

What are the factors which require the implementation of these policies?

By 1980: Population is expected to increase approximately 30 percent; forest acreage is expected to increase by 25 percent; agricultural acreage will diminish by about 30 percent; industry, power, and water related economic activities all anticipate expansion.

It is evident that current adequacies of water supply will not exist forever; that needs and the competition thereof will be intensified. For example, irrigation in Maine is relatively nonexistent in our agricultural practices of today, but with the one-third less acreage to meet the requirements of one-third more in population, certainly irrigation will be one of the methods of intensifying agricultural produc-

tion. These and all other facets of activity have similar relationships, one to the other.

Finally, how shall the public through its government implement these policies?

In the New England area the emphasis of governmental responsibility has traditionally been, and will no doubt continue to be, upon the local and State mechanism. The future policy of the State of Maine must recognize this responsibility and the future implications of water resource problems.

Federal participation, however, should be welcomed in certain areas of the resources scene. The Federal Government mechanism in cooperation with State and private agencies, provides and can provide the best possible research and investigative facilities and can act, by virtue of its structure, as both a primary and secondary source of research information.

It is the area of research and technical investigation that is of highest priority at this time. The machinery of the Federal system also can be directed to education and public information, while the vast financial backing of the Federal Government can be applied to stimulate local activity, through matching funds and similar means, in the initiation of required projects in such fields as sewage disposal, water supply, and so forth.

It seems clear to me that responsibility for the resource should lie with the Government. The State can contribute to, as well as apply, the results of research activity and it must insure that the vested interests are those of the public as a whole. The local government will in most instances be the agencies through which policy is manifested. Public water supply, sewage disposal, and other similar activities relating to the resource can only be effected through a local instrumentality.

It seems to me proper that the role of government be that of a referee in the implementation of the aforestated policies to the end that maximum benefits be obtained from our valuable water resources.

In conclusion, I would like to say a word about the proposed Passamaquoddy tidal project which is of such major importance to Maine, this country's Northwest, and to adjoining sections of Canada. This brilliantly conceived plan to harness the huge tides of the Passamaquoddy Bay area would open up a new resource.

In Maine we are greatly enthused about that prospect.

We thank you, gentlemen, and we sincerely hope that the results of your hearing today will be very beneficial and we will listen to you greatly during the day. Thank you very much.

The CHAIRMAN. Thank you.

Senator MUSKIE. Thank you, Governor.

I would like to say for the committee we are deeply appreciative for the hospitality extended by yourself to the committee and the group traveling with the committee last night.

Governor CLAUSON. Thank you, very much.

Senator MUSKIE. Since the hearings began this morning, Congressman James Oliver of the First Maine District has come into the room.

I would like to welcome him on my own behalf as well as on behalf of the committee and to invite him at this point to make any statement he may care to.

STATEMENT OF HON. JAMES OLIVER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MAINE

Representative OLIVER. Thank you very much, Senator.

Mr. Chairman, it is a real pleasure for me to be here representing the people, the constituents in the First Congressional District of the State.

We appreciate very much this visit of yours. We realize the importance which is attached to your mission. We know that you are giving a great deal of your personal time during the period when you should be on vacation, may I say, and I just want to say that so far as I am concerned, as a congressional representative, that I am in full and wholehearted support of what you are doing.

When the opportunity presents itself I would like to have permission to extend my remarks in the official record of this committee and assure you of my complete support of what you are doing. Thank you very much.

The CHAIRMAN. Thank you very much, Congressman, and the record will be kept open until the 15th of January for such statements as you and Senator Muskie or other legislative representatives from Maine would care to have inserted in the record.

Representative OLIVER. Thank you very much, sir.

Senator MUSKIE. Thank you, Jim.

I would like at this time to read a letter from Congressman McIntire, addressed to Senator Kerr:

It is with deep regret that I find it impossible to be personally present to greet you, the members of your committee, and your staffs, as you assemble for the hearing in Augusta, Maine, regarding national water resources. We are indeed honored that the Senate Select Committee on National Water Resources has incorporated this December 7 hearing into its schedule and assure you that you are most welcome. We look forward to this study being of material benefit to the State of Maine.

The Congressman has attached a statement which he requests be made a part of the record of the hearing.

The CHAIRMAN. Yes. It will be entered in the record at this point.

(The statement referred to follows:)

STATEMENT OF HON. CLIFFORD G. MCINTIRE, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MAINE

Mr. Chairman, Maine is honored to have this distinguished Senate subcommittee visit our State in the course of its nationwide study of water resources.

Our beloved State of Maine is also most fortunate in having water resources that, in comparison with many States, are relatively abundant and clean. This is not to say that we are not short at times nor to say that we do not have pollution problems. However, because our State has hundreds of lakes serving as natural reservoirs and is well wooded, giving very substantial control in our watersheds, we find ourselves blessed with fewer of the problems and in lower degrees than the current experience in many areas.

In my opinion, we must be diligent and conserving of our water resources, keeping in mind the need to control erosion in the management of our farms, the building of highways, and woodland management practices. Increasing population and expanding industry requires more water, and potable supplies must be improved. A major problem is stream pollution relating itself to sanitation and the appropriate development of fish and wildlife. This is an area where progress must be made constructively, giving full recognition of the problems of industry as well as public interest. In Maine, we are meeting the problem slowly but constructively.

I believe the Federal agencies concerned with water management are serving Maine well and that further expansion of Federal activity is not a pressing need as far as Maine's water resources are concerned. Our principal need is for survey studies and basic knowledge. With these tools, our water resource problems can be constructively resolved within the capability of our public and private resources here in our State.

Senator MUSKIE. May I also insert at this point, Senator, a statement which I had prepared, and a letter and resolution from Senator Margaret Chase Smith.

The CHAIRMAN. Very good.

(The statements referred to follow:)

STATEMENT OF HON. EDMUND S. MUSKIE, U.S. SENATOR FROM THE STATE OF MAINE

At the outset of my remarks, I would like to express appreciation to those who are responsible for this hearing; especially to Senator Kerr, chairman of the select committee, Senator Hart, Senator Moss, and his colleagues on the committee for making it possible to hold a field hearing on this most important subject in Maine where attention can be focused on the special problems of northern New England; to Senator Hart and his staff assistants who have worked closely with various individuals in Maine to make this a productive session; to Governor Clauson and his staff, who have taken the responsibility of coordinating the presentation of views on the part of the various agencies of State government having a direct interest in water resources.

To the best of my knowledge, this is the first hearing of its kind to be held in Maine for the purpose of open discussion in all areas of interest affecting water resources activity. If we do nothing more by our discussion today than focus public attention upon the nature and extent of our water resources, the potentials related to their development and the principles and issues arising out of the shaping of policies bearing upon their conservation and utilization, we will have accomplished a great deal. It is my hope that we may do more, and that this field hearing will help to stimulate decisions which will result in continuing coordinated action in water resources development on the part of citizen groups, State agencies, and Federal agencies on a cooperative basis.

There are many aspects of water use which have been recognized as legitimate areas of public policy in Maine. I shall mention some of the most important and indicate briefly the nature of our experience to date.

First, we have maintained in Maine over many years a program of streamflow data gathering. This has been a joint effort of Federal-State Government and private interest. During my administration as Governor, I recommended legislative action to institute a program of ground waters research in cooperation with the U.S. Geological Survey. This program was adopted and preliminary investigations have been conducted.

An equally important field with surface water measurements and ground water studies is the subject of water quality. Here again there is a field for cooperative effort between State government and the U.S. Geological Survey which maintains a field service for this purpose.

Another field of major interest is water pollution. While it is recognized that the use of water bodies as a final means of disposal for waterborne waste is a common practice, the disposition of larger volumes of untreated sewage and industrial process waste has resulted in serious deterioration of the quality of receiving waters. It is the use of streams for disposal of waste which is most in conflict with other desirable uses, especially recreation, shellfish operation, fish migration, industrial water supply, and, in some instances, public and agricultural water use.

We are not unmindful of these conflicts, and the State has enacted legislation establishing a water improvement commission and a program of classifying waters designed to maintain and improve standards of quality which will permit the greatest utilization of this valuable resource. Maine has also entered into a compact with the other New England States for working out the solutions to water pollution problems of an interstate nature.

The State also provides funds to be made available to municipalities for the development of municipal sewage treatment systems. Thus we are making progress in this field.

In looking into the future, however, it would appear that much of the practical solution of water pollution problems rests in the field of applied research. Already we have indications of the results of research in the conversion of sulfite liquors from pulp and paper manufacture into a useful product; thus, not only creating new products for the market places of the world, but at the same time reducing the quantitative amounts of waste entering our streams.

Flood control is not as serious a problem in Maine as it is in some of the other New England States, although individual communities do face special problems. Navigation and beach erosion is the principal responsibility of the Corps of Engineers of the U.S. Army.

The earliest Corps of Engineers project in Maine dates back to 1821 when Congress appropriated funds to provide for a survey of the Isle of Shoals to assure the practicability of a safe harbor by the construction of breakwaters. Since that time, water resources development work has expanded to include improving the harbors of the State, dredging the navigable streams and maintaining navigable channels, administering the laws relative to protection and preservation of navigable waters, making surveys and engineering reports on all major streams of the State, making surveys of shore protection and beach erosion measures and planning and building projects to provide efficient use of the vital water resources of the State. This work has been performed in accordance with the directions of Congress, in close cooperation with State and local authorities and Federal agencies, to provide beneficial improvements of the type desired by the citizens of the communities and areas most directly concerned.

While Corps of Engineers construction activities in Maine in the past have been mainly limited to navigation works, studies and surveys have included flood control and shore protection analyses. Investigations presently underway include consideration of protection from hurricane-induced tidal flooding and a survey of tidal power development in Passamaquoddy Bay.

Passamaquoddy Tidal Power Survey

The possibility of generating electric power from the ocean tides in the Passamaquoddy Bay area was first investigated by Dexter Cooper in the 1920's. Actual construction on a Passamaquoddy tidal power project was begun in June 1935 when the Corps of Engineers constructed two small rock-filled dams and initiated a third in Cobscook Bay. This work was on a one-pool scheme entirely within the United States and was undertaken as a part of the emergency relief program. Construction was suspended in August 1936, due to a lack of funds.

Early in 1956, Congress authorized a comprehensive survey of an international two-pool scheme for the purpose of determining the current economic feasibility of developing power from the tidal waters of Passamaquoddy Bay, New Brunswick, and Cobscook Bay, Maine. The work was referred to the International Joint Commission which appointed an International Passamaquoddy Engineering Board. Funds have been authorized by the United States and Canada to cover engineering and fisheries studies. The bulk of the engineering funds appropriated were allotted to the Corps of Engineers where the work is being performed by a special unit in the New England division. Funds were also allotted to other agencies, such as the Federal Power Commission, for studies of phases of the work within their usual responsibilities, and to insure that a project, as designed, would best preserve and develop available resources and serve present and future needs.

The report prepared by the Corps of Engineers was submitted to the International Joint Commission early in October, and, except for the detailed plans, the proposed project is now a matter of wide public knowledge, having received extensive press coverage.

I think it goes also without saying that the development of the tidal power project in the Passamaquoddy area may very well hold the key to the future economic development of this State and the adjoining area in Canada.

I shall not take more time in this opening statement to discuss the details of the proposed project since I am confident that this is a subject to which the discussion will return during this hearing today.

Once again, Senator Kerr, Senator Hart, Senator Moss, and the members of your committee staff, I want to take this opportunity to welcome you to Maine and to thank you for focusing our attention on one of our most important re-

sources. I deeply appreciate your presence and your interest. My primary interest has been to suggest to you the intimate connection we all see between water resource development and the future of this State and our Nation.

LETTER OF HON. MARGARET CHASE SMITH, U.S. SENATOR FROM THE STATE OF MAINE

U.S. SENATE,
COMMITTEE ON ARMED SERVICES,
December 3, 1959.

Hon. ROBERT S. KERR,
Chairman, Select Committee on National Water Resources, U.S. Senate, Washington, D.C.

MY DEAR MR. CHAIRMAN: I want to extend my best wishes and appreciation to you and the members of your committee on the hearings you will hold in Maine this coming week.

Without question the water resource of greatest current interest in Maine is the proposed Passamaquoddy tidal power project. You are well aware of my interest in this proposal as we entered the U.S. Senate at the same time and it was 2 days after you and I were first sworn in as U.S. Senators that I introduced Quoddy legislation. I had previously done this in the House of Representatives.

In the 11 years that it has been my privilege to serve in the Senate with you, I have made repeated efforts on this objective including the successful effort for an overall survey which was authorized by my Senate Joint Resolution 12. During all those years, you have given unbroken support to my efforts and I am deeply appreciative of that support as I am sure the people of Maine are.

I am enclosing for the attention of your committee copies of a proposed concurrent resolution and a legal memorandum prepared by the office of the legislative counsel of the U.S. Senate on the resolution. I have taken this up with the members of the Maine congressional delegation for consideration of introduction after the International Joint Commission has issued its findings and recommendations on the overall survey.

Quoddy is only one of the important water resources of Maine meriting the attention and consideration of your committee. I shall not attempt to summarize all of the water resources of Maine and the pertinent aspects thereto as I am confident that the Maine citizens appearing before your committee will do that in an excellent manner.

I wish for you a most informative, constructive, and enjoyable time in Maine and if there is any way in which I can be of assistance to you I hope you will call upon me.

Sincerely yours,

MARGARET CHASE SMITH, *U.S. Senator.*

CONCURRENT RESOLUTION

Whereas by Public Law 401, 84th Congress, the Congress directed the Secretary of State to arrange for a final survey by the International Joint Commission of the proposed Passamaquoddy tidal power project in the State of Maine and the Province of New Brunswick, Canada, to determine its economic feasibility and its probable contribution to the national economy and the national defense; and

Whereas the Secretary of State has reported to the Congress the results of such survey pursuant to said Public Law 401; and

Whereas such survey clearly establishes the economic feasibility of the project, and its importance to the economies of the United States and the Dominion of Canada, and to the national defense; and

Whereas the project considered in such survey and which is recommended differs from earlier proposals for a Passamaquoddy tidal power project in that it is an international two-pool project which permits production of continuous power, and includes a river hydroelectric auxiliary plant to augment the tidal plant; and

Whereas the survey demonstrates that this international power project could be undertaken without detriment to the fisheries of the region; and

Whereas since the need for, and the economic feasibility of this project, have been thoroughly explored and documented, and its vital contribution to the common defense clearly established, it is in the interest of this country and the Dominion of Canada to work out a mutually acceptable basis on which the construction of the project may proceed without further delay; and

Whereas because of the international character of the proposed project, no work or preparations for work thereon may properly be undertaken until such time as there has been concluded between the United States and the Dominion of Canada a treaty or other international agreement setting forth the rights and duties of the respective countries with respect to such project: Now, therefore, be it

Resolved by the Senate (the House of Representatives concurring), That the President is requested to cause negotiations to be commenced at the earliest practicable date with the Dominion of Canada with a view to entering into a treaty or other international agreement under which the Passamaquoddy tidal power project may proceed in accordance with the findings and recommendations of the International Joint Commission.

MEMORANDUM FOR SENATOR SMITH CONCERNING THE PASSAMAQUODDY TIDAL POWER PROJECT

The proposed Passamaquoddy tidal power project calls for the construction, operation, and maintenance of certain works within the boundaries of the Dominion of Canada and of certain other works (including the actual turbines and other power generating equipment) within the boundaries of the United States.

The nature of the project is such that the entire works could only be operated as an integrated unit, because, among other reasons, the very functioning of the power generating facilities requires the closely coordinated opening and closing of certain locks to be located in Canada and of certain other locks to be located in the United States.

The Passamaquoddy project is distinguishable from the St. Lawrence Seaway project where each of the two nations did proceed, to a considerable extent independently of each other, with works within its own boundaries which formed parts of a joint international project. In that project there were present special circumstances which do not obtain in the case of Quoddy, viz:

(1) The Canadian Government had already clearly and forcefully demonstrated its interest in participating in such project by, first, entering into a treaty with the United States to provide for such project (which treaty never became effective because of lack of approval by Congress as required by its terms), and, second, after the failure of such treaty, indicated its intention to undertake a similar project which was to be located exclusively in Canada;

(2) The International Joint Commission, which was established pursuant to treaty between the two nations, already had sufficient authority to enable the two countries to cooperate in carrying out the project; and

(3) The works undertaken by each of the two nations within its own boundaries would not necessarily have been without value even if the other nation did not undertake similar works on its side of the international boundary.

In the case of the Passamaquoddy project—

(1) Canada has demonstrated no such interest in participating in the project, nor is it likely to do so without being assured of some rights in, or benefits from, the electric power to be generated; (2) the International Joint Commission does not have authority to provide for the disposition of the electric power to be generated by such project; and (3) the works to be constructed in one country would be completely valueless without the construction of necessary works in the other country.

Thus, the integrated nature as well as the international character of the Passamaquoddy project makes it unfeasible for the United States to proceed with the construction of works within its own boundaries until such time as the rights and duties of the two nations with respect to such project have been defined by a treaty or other international agreement for that purpose. Especially important and necessary would be the provision of such treaty or agreement which prescribes the rights of the two countries with respect to the

electric power to be produced by such project; for without some such provision Canada would derive no rights or benefits from the project inasmuch as the power-generating facilities would be located in the United States.

Since the negotiation of treaties in the United States is an executive function, it would appear that the only congressional action which might be appropriately taken at this time to expedite the carrying out of the Passamaquoddy project would be a resolution requesting the President to enter into negotiations with Canada with a view to the conclusion, at the earliest possible date, of an appropriate treaty or other international agreement for the purpose of bringing this project to fruition.

Senator MUSKIE. Now if we may proceed with the witnesses from our State, we have a list of witnesses upon whom I will call in the order of their appearance on the list. Before doing so, I would like to indicate the presence here of several representatives of U.S. Government agencies.

I have asked one of these gentlemen to make a brief statement later in the morning although he is not on the list of witnesses.

From the Department of Agriculture, representing the Forest Service, we have Norman R. Tripp, chief of the section of land use plans and watersheds, northeastern region, and Gerald S. Wheeler, supervisor of the White Mountain National Forest.

The CHAIRMAN. Will those gentlemen stand as their names are called so we might identify you?

Mr. TRIPP. I am Norman Tripp.

Senator MUSKIE. Is Mr. Wheeler present this morning?

Mr. TRIPP. I think he did not make it, Senator. I did not see him.

Senator MUSKIE. Is there a representative of the Soil Conservation Service here?

Mr. OLIVER. I am W. B. Oliver, State conservationist, Soil Conservation Service.

Senator MUSKIE. Representing the Department of the Army, Corps of Engineers, is Brig. Gen. Alden K. Sibley, division engineer, New England.

We are delighted to welcome you, General, and are most appreciative of you taking the time.

The Department of Health, Education, and Welfare, the Public Health Service, Robert C. Ayers, headquarters staff.

Mr. AYERS. Thank you, Senator.

Senator MUSKIE. And Mr. Lester Klashman, of the New York regional office.

Mr. AYERS. I have not seen him come in. He may be coming by boat or something. I do not know.

Senator MUSKIE. Then representing the Department of the Interior, the Bureau of Sport Fisheries and Wildlife—do we have a representative of that agency?

The Bureau of Commercial Fisheries—do we have a representative of that agency?

Mr. BRACKET. Lee Bracket.

Senator MUSKIE. We welcome you gentlemen and appreciate your taking the time to be here.

Senator Kerr, Senator Moss, and Senator Hart.

There are several agencies of State government which are concerned with the conservation and development of our resources.

These departments are the department of economic development, the department of agriculture, the public utilities commission, the

sea and shore fisheries commission, the Maine Port Authority, the forest commissioner, the water improvement commission, the State park department, and the department of labor and industry.

During my administration as Governor these departments were organized in an informal way into an organization called the interagency resources committee.

The intent was to develop coordination among these agencies in the development of our resources.

The gentleman who chaired that committee and apparently who still does is the commissioner of the department of fish and game. So I would like to present at this time the commissioner, Roland H. Cobb, who is not only commissioner of the department and chairman of this committee, but also served on the NENYIAC report so-called, and who is also serving on the fisheries board of the Passamaquoddy study.

Roland Cobb.

STATEMENT OF ROLAND H. COBB, COMMISSIONER, DEPARTMENT OF INLAND FISHERIES AND GAME

Mr. COBB. Senator Kerr, Senator Moss, Senator Hart, Senator Muskie, and Representative Oliver.

I am Roland H. Cobb, commissioner of inland fisheries and game, and chairman of our Maine interagency resources committee. Here present are capable representatives of several State agencies—members of the interagency resources committee—who will bring to your attention salient points which they feel should receive special emphasis in your consideration of our Maine water resources.

We, in the State of Maine, are particularly grateful that your committee has honored us by holding this meeting.

It is certainly in our mind that there needs to be some sort of a national water policy, particularly in view of the fact that we are much interested in the Northeastern Resources Committee. Such a committee, working as an interstate and Federal committee, needs guideposts so that in recommendations for more localized water policy they would be generally in line with a national policy.

For this reason, I personally feel that the formation of the Northeastern Resources Committee should receive favorable action in the next Congress.

Certainly, from our point of view, Federal pollution control should be expanded and it is rather obvious that the proper development of our Maine and New England harbors, which are important to the Nation as a whole, should receive careful consideration. We are undoubtedly on the verge of having to use sea water for consumptive purposes, when it can be made economically feasible for the removal of the salinity. These are national questions and undoubtedly the committee has already heard a great deal of testimony in this direction.

Speaking for my inland department, I am pleasantly convinced that our Maine people, from the largest interests to the worker in the field, are accepting the multiple-use concept—as it applied to our waters—as basic.

Naturally, our fisheries come first to mind and we do have serious problems to resolve in matters of lake and pond water levels, minimum flows in rivers and streams, water pollution, and others.

We are gravely concerned, presently, with the St. John River watershed. Unfortunately, we do not have a valid multipurpose survey of the St. John basin. Our Governor has requested the State Department for a survey, to be implemented under the International Joint Commission, similar to the one done for the St. Croix River basin 2 years ago.

Presently, we have a strictly power survey of the region and, in NENYIAC, the New England-New York interagency report, a preliminary report of multipurpose nature, but not based on an intensive survey, and not including Canada—the St. John being a border river.

In the meantime, the Passamaquoddy tidal power project survey has been published, recommending a high dam at Rankin Rapids on the St. John River; this location being below the confluence of the Allagash River and the St. John would flood out most of the Allagash and most of the St. John which is in Maine. In NENYIAC, an alternative plan is recorded, placing the high dam at Big Rapids, which is above the confluence of the Allagash and the St. John with a low dam at Lincoln School, to pick up Allagash water, but flood only the lower 6 or 7 miles of this river.

This recommendation is supported by the Fish and Wildlife Service of the Department of the Interior, by this department, and by thousands of citizens interested in preserving this last entirely wilderness river in the East, and possibly the country. The National Park Service is considering it as a national park or recreation area.

A very capable engineer who has carefully surveyed the damsites writes as follows:

First, I believe that the International Joint Commission will be weakening its position for any possible development of the Quoddy project if it insists on building up opposition to the plan through its refusal to recommend consideration of the alternate Big Rapids-Lincoln auxiliary power source. Economically, according to the LJC's own figures, the alternate Big Rapids-Lincoln project is second only to the preferred Rankin Rapids project in supplying the necessary backup power to the tidal project.

The Passamaquoddy tidal project is not feasible on its own. With the use of Rankin Rapids as an auxiliary power source, the combination is feasible for U.S. construction on both a 50- or a 75-year amortization period.

The alternates of a pumped-storage project, or use of Rankin Rapids incremental capacity, would have a benefit-cost ratio of less than unity for a 50-year amortization period. And a ratio slightly in excess of unity for a 75-year period. The possibilities of using a steam-plant auxiliary were also given consideration in the report, but because of the requirements for continuously varying load conditions to fit in with the tidal generation, steam backup power is not considered feasible.

In contrast to these methods of supplying auxiliary power, the Big Rapids-Lincoln project in combination with Quoddy produces benefit-cost ratios in excess of unity for both 50- and 75-year amortization periods. These ratios compare favorably with Quoddy plus Rankin Rapids.

Some reregulation will be available using the 22,000 acre-feet of storage at Lincoln. There will be no smoothing out of the Rankin Rapids discharge. This lightly passed-over point may be more important than the report indicates, since the discharges from the auxiliary plant will be extremely erratic and nonuniform.

The Allagash River is of great importance to the State and to all conservationists for its scenic beauty, its squaretail trout, and abundance of wildlife. Naturally, this department of State govern-

ment is strongly opposed to a high dam at Rankin Rapids, and urges the high dam at Big Rapids and low dam at Lincoln School.

Three of our great rivers, the Androscoggin, the Kennebec, and the Penobscot, are being lost to our fishery in varying degrees because of pollution and obstructions. Probably I should broaden the field by including all recreational interests.

Finally, I would like to call the committee's attention to two reports—"Rankin Rapids Reservoir—Maine—A Detailed Report on Fish and Wildlife Resources," by the U.S. Department of the Interior's Fish and Wildlife Service.

Also, "Preliminary Report of Effects of the Proposed Rankin Rapids Dam on the Fisheries of the Upper St. John River," put out by the Maine Department of Inland Fisheries and Game, in 1957.

With Senator Muskie's approval I would be glad to introduce other members of the interagency committee, or you may do it.

Senator MUSKIE. I think it would be well, Roland, if you handled that in your own way. But before doing so I think the committee may have some questions, and I would also like to have you expand a little bit on a couple of points which would be obscure to the committee unless you did so.

I wonder if you would explain the genesis of this Northeastern Resource Committee, its function and proposal.

Mr. COBB. Mr. Tani, who will be speaking shortly, is going to take that up in detail unless you prefer that I do.

Senator MUSKIE. No. That will be fine, as long as the point is going to be covered.

I do not know, Mr. Chairman, whether at this point we ought to step into the door that has been opened by Mr. Cobb with respect to the Passamaquoddy project. We are going to have I expect some discussion of it by later witnesses.

At the same time it might be well if we could limit it for the time being being to brief the committee a little more thoroughly on exactly what is implied in the statement made by Mr. Cobb.

Would that be helpful?

The CHAIRMAN. I wonder if either your office, Mr. Cobb, or the Engineer's Office, has a map of the area you referred to here of the St. John River and the possible projects on it?

Mr. COBB. I do have.

Miss FERRIS. We just sent for one, Senator.

The CHAIRMAN. You have sent for it?

Miss FERRIS. Yes, sir.

The CHAIRMAN. As I look at the small map, the St. John River originates in Maine and goes quite some distance, and then becomes the international boundary—for quite a ways and then goes out to Canada entirely.

Mr. COBB. That is right.

The CHAIRMAN. Do you know the volume of water in this river along the area of the international boundary, say, before it reaches there and before it ceases to be an international boundary line?

Mr. COBB. I have here a member of the public utilities commission whom I believe could give us that information.

Mr. Hayes is here.

STATEMENT OF GORDON S. HAYES, DISTRICT ENGINEER, WATER RESEARCH DIVISION, PUBLIC UTILITIES COMMISSION

Senator MUSKIE. I wonder if Mr. Hayes would be willing to take the chair. I think we might speed it up a little bit if you gave us that data directly.

Mr. HAYES. Mr. Chairman, there is a gaging station operated on the St. John River at Fort Kent which is above where it leaves the boundary but below the confluence of the Allagash and other major tributaries.

The mean angle flow at that point is 9,418 cubic feet per second. It has a drainage area of 5,690 square miles at that gaging station.

The CHAIRMAN. How many cubic feet per second?

Mr. HAYES. 9,420—9,418 per second.

The CHAIRMAN. Would that reduce itself to about 8 million acre-feet of water?

Mr. HAYES. That is right, sir.

I have to stop and back up because we do not use that figure here as to the acre-feet, but that is right.

The CHAIRMAN. And what does the volume increase to? Apparently it leaves the international boundary of the State a little way before it reaches Grand Falls.

Mr. HAYES. That is right, sir.

The CHAIRMAN. Does that flowage increase materially between the two points?

Mr. HAYES. Not materially between Fort Kent and Grand Falls. I think there are about 1,000 square miles of drainage area added. At Fredericton, which is the tidewater, and where it goes into tidewater in New Brunswick there are around 12,000 square miles of drainage there.

The. CHAIRMAN. What was that town?

Mr. HAYES. Fredericton, New Brunswick. It may not show on your map. It may be too far to the east to show on that map.

The CHAIRMAN. What is the fall? What is the highest elevation on the river? Is it near its source apparently where Nawsbrook——

Mr. HAYES. The highest elevation on the Maine St. John River is down at St. John Pond. That is the first, second, third, fourth, and fifth St. John Pond. That is considered the head of the Maine River.

The CHAIRMAN. What is the elevation there?

Mr. HAYES. That I could not tell you, sir, without going back to my maps. I do not know offhand.

The CHAIRMAN. Apparently this indicates that Kelly Brooks Mountain at Big Rapids elevation is in the neighborhood of 1,500 feet. Is that just the mountain? That does not reflect the elevation of the river?

Mr. HAYES. No, sir.

In the International Joint Commission report which Mr. Cobb referred to which was a power survey in 1952 there is a profile and quite a complete study for power of the whole St. John River basin.

The CHAIRMAN. I wonder if there is a brief résumé of that report which could be put in this record at this point?

Mr. HAYES. We can get it I am sure.

The CHAIRMAN. Fine.

(The information referred to follows:)

STATEMENT OF ROLAND H. COBB, COMMISSIONER OF MAINE DEPARTMENT OF INLAND FISHERIES AND GAME

THE ST. JOHN RIVER

The St. John River Basin is located in northern Maine and adjacent areas in the Provinces of Quebec and New Brunswick. It lies between the watersheds of the St. Lawrence River to the north and the Penobscot River and St. Croix River to the south and west. The river has a total drainage area of about 21,600 square miles at the mouth of the river at St. John, New Brunswick, and about 16,000 square miles at the head of tidewater near Fredericton, New Brunswick. About 7,600 square miles of the total drainage area are in Maine.

The main river rises in Little St. John Lake in the southwestern corner of the basin. As the Southwest Branch it flows northerly for about 38 miles and is the international boundary between Maine and Quebec. It then continues about 12 miles through Maine to its confluence with Baker Branch. From this point, as the St. John River proper, it describes a great arc to the sea, flowing in a generally northeasterly direction to the mouth of the St. Francis River, a distance of about 95 miles, and thence easterly as the international boundary about 70 miles to Hamlin, Maine. It then turns to a generally southeasterly direction and flows about 200 miles to its mouth at St. John on the Bay of Fundy.

The major tributaries, in downstream order, are the Big Black, Allagash, St. Francis, and Fish Rivers, Baker Brook, Madawaska, Green, Aroostook, and Tobique Rivers. Of these, the drainage areas of only the Allagash and Fish are entirely in Maine.

The total fall of the river from its source at Little St. John Lake to tidewater near Fredericton, New Brunswick, is about 1,580 feet. Only two sites on the main river have been developed, both for power. These are the Grand Falls and Beachwood, both in New Brunswick, where heads of 132 feet and about 60 feet respectively are utilized. The mean flow of the river at the gaging station at Fort Kent, Maine (drainage area 5,690 square miles), for the 31 years 1927–57 was 9,438 cubic feet per second.

The proposed development at Rankin Rapids in Maine is located about 3 miles above the mouth of the St. Francis River. Plans submitted by the International St. John River Engineering Board to the International Joint Commission in their preliminary report on April 6, 1953, envisioned a dam which would develop a head of about 255 feet with a reservoir of 1,460,000 acre-feet of usable capacity in top 34 feet and the pond would extend over 40 miles up both the Allagash and St. John Rivers. The maximum headwater level in this reservoir would be at elevation 810 feet, mean sea level datum, and it would be operated to provide a dependable flow of 4,100 cubic feet per second at the damsite. This 1953 plan is very similar to one suggested by the New England-New York Inter-Agency Committee in its report of 1955. Detailed plans of the Rankin Rapids development as proposed by the International Passamaquoddy Engineering Board in its report to the International Joint Commission in October 1959 are not yet available to me but general plans and plates which are included in appendix 4 of that report indicate the maximum reservoir level would be at elevation 860 feet, mean sea level datum. This is an increase of 50 feet over prior plans and would extend the reservoir nearly 20 miles farther up the Allagash to include Long and Umsaskis Lakes.

An alternate plan of development of the river in this area was suggested in the New England-New York interagency report. This alternate plan envisioned a high dam and powerhouse at Big Rapids and a relatively low dam and powerhouse at Lincoln School. The dam at Big Rapids would be located above the mouth of the Little Black River and was envisioned to store water to an elevation of 860 feet with a usable capacity in the top 50 feet of 960,000 acre-feet and a gross head of about 285 feet. At Lincoln School, about 1 mile below the Rankin Rapids site and about 15 miles downstream from Big Rapids, the second dam would provide about 98,000 acre-feet of storage in the top 20 feet and the powerhouse would operate under a gross head of 80 feet. Headwater elevation in this pond would be 630 feet mean sea level datum and would only create pondage on the Allagash River to about 5 miles above its mouth. The reservoir at Big Rapids would not affect the Allagash River but would create pondage somewhat farther up the St. John River than the Rankin Rapids plan. Appendix 4 of the Passamaquoddy report indicates further studies of this alternate plan were made with one major change. The level of the pool at Big Rapids was envisioned to be at about elevation 920 feet mean sea level elevation, an increase of 50 feet over the earlier plan.

Drainage areas at the sites mentioned above are as follows:

	Square miles
Big Rapids	2,419
Rankin Rapids	4,060
Lincoln School	4,066

Detailed descriptions of the entire basin may be found in the New York-New England Inter-Agency Committee report and in the International St. John River Engineering Board report to the International Joint Commission. Further data on the Rankin Rapids and Big Rapids-Lincoln School projects will be available when "Appendix 12: Auxiliary River Hydrodevelopments of the International Passamaquoddy Engineering Board Report" to the International Joint Commission is released.

The CHAIRMAN. I notice reference in Mr. Cobb's statement to NENYIAC on page 2 in which he states that NENYIAC——

Mr. HAYES. That is the New England-New York Inter-Agency Committee.

The CHAIRMAN. I know what it is. I am the author of the amendment that created it.

I was trying to find out what you call it.

Mr. HAYES. We call it NENYIAC (pronounced Neeniyak).

The CHAIRMAN. NENYIAC?

Mr. HAYES. NENYIAC.

The CHAIRMAN (reading):

An alternative plan is recorded, placing the high dam at Big Rapids.

Then I notice your statement that certain agencies favor certain alternate projects. And I am wondering if that is the one that is indicated in the NENYIAC report.

Mr. HAYES. That is.

The CHAIRMAN. That is?

Mr. HAYES. A so-called ultimate report that is recommending the high dam at Big Rapids with a low dam at Lincoln School.

The CHAIRMAN. Does that report indicate the amount of power to be generated there?

Mr. HAYES. It does.

The CHAIRMAN. How much?

Mr. HAYES. I cannot tell you without looking it up in NENYIAC.

The CHAIRMAN. Would the district engineer have that information at his fingertips?

General SIBLEY. What's that?

The CHAIRMAN. I wonder if you would put that in the record?

Mr. COBB. We are sending out for it right now, Senator.

Senator MUSKIE. Does General Sibley have that information at his fingertips?

General SIBLEY. Yes; I have, sir. I will be glad to offer it.

The CHAIRMAN. That is all, sir.

Senator MUSKIE. I wonder if it would be helpful at this point, Roland, to give us a little more detail on the nature of the Allagash River?

Mr. COBB. Yes.

Senator MUSKIE. And the alleged proposal which has not appeared in any concrete form to the best of my knowledge for a national park in that area.

Mr. COBB. You will note that the Allagash River has its headwaters in Allagash Lake and for some 30 miles or more comes into the St. John River.

The CHAIRMAN. Where does it come into the St. John?

Mr. COBB. It comes into the St. John right at Allagash Plantation—St. Francis—the village at Allagash above the St. Francis.

The CHAIRMAN. The report you are going to put in the record will show the amount of the electric power that could be generated at most of the proposed project sites.

Mr. COBB. That is true. It appears in the NENYIAC report.

The CHAIRMAN. You are going to put in an abbreviated edition of one of those reports?

Mr. COBB. Yes, sir.

The CHAIRMAN. All right. Thank you very much.

Mr. COBB. Does that give you the information you wanted?

Senator MUSKIE. Roland, will there be a discussion by a subsequent witness of the proposed national park in that area?

Mr. COBB. The State park director is here. He can take that up in his presentation.

Senator MUSKIE. Fine.

Why don't you proceed? The committee may have subsequent questions to direct to you, too. I think it might be well if we have these other witnesses at this time.

Mr. COBB. Mr. Chairman, and members of the committee, I want to present Mr. Sulo Tani, of the department of economic development.

STATEMENT OF SULO TANI, DIRECTOR, RESEARCH AND PLANNING, DEPARTMENT OF ECONOMIC DEVELOPMENT, STATE OF MAINE

Mr. TANI. Senator Kerr, Senator Moss, Senator Hart, Senator Muskie, and Congressman Oliver, my name is Sulo J. Tani. I am technically and officially director of research and planning for the Maine Department of Economic Development. We have a concern not only in economic development but in much of the planning and coordination of planning aspects in State government.

I am also a member from Maine on the Northeastern Resource Committee which was alluded to by Mr. Cobb and to which Senator Muskie referred.

I am going to limit my remarks to just a brief explanation of what this Northeastern Resource Committee is and particularly its relationship to Maine's water and related resources.

You will hear more of this organization tomorrow, in Boston, at which more of the members of this committee will be present. So you will get considerably more of the details. I will touch the highlights which will give you some background on it.

The Northeastern Resource Committee was organized in February, 1957. Its authority stems from a charter that was issued by the Federal Inter-Agency Committee on Water Resources. This is the President's Inter-Agency committee which we commonly call the Ice Water Committee.

The CHAIRMAN. Ice Water?

Mr. TANI. This is one of those abbreviated names, the Ice Water Committee.

The CHAIRMAN. I just want to be sure I understood it.

Mr. TANI. Ice Water.

This charter was issued on June 29, 1956. This was followed by a joint action.

The CHAIRMAN. Who issued the charter?

Mr. TANI. The charter was issued by the Federal Inter-Agency Committee on Water Resources. The issuance of this charter was followed by a joint action of the New England Governors in their annual conference in November of 1956 when it by joint action and by joint agreement established this New England or Northeastern Committee. It is essentially a New England Committee but it is an open-ended thing which would permit New York, New Jersey and Pennsylvania to join at such time as they wished.

It is still an informal committee. That is, it does not have any status in law, through either Federal or State legislation.

Its purpose, as stated in the charter and in the agreement of the New England Governors is, and I will quote this.

> To provide in the Northeastern region improved facilities and procedures for the coordination of the policies, programs, and activities of the States and Federal agencies in the field of water and related land resources, investigation, planning, construction, operation, and maintenance; to provide means by which conflicts may be resolved; and to provide procedures for coordination of their interests with those of other Federal, local governmental, and private agencies in the water and related land resources field.

The formation of the Northeastern Resource Committee was a direct result of the extensive New England-New York Inter-Agency Committee study, the so-called NENYIAC study and report. That is, there was a report that followed which was extensive and which we feel was probably one of the most comprehensive resource studies that has ever been made in this country on a regional basis.

It did cover the resources of New England and eastern New York. That is why New York is involved in the title. The study was completed in 1955.

It was partly a desire, that is, partly as a result of a desire on the part of the New England States to keep this important body of information that had been assembled in the NENYIAC study up to date, that this whole committee or this committee was organized.

Here was this body of information, much of which began to be antiquated and in need of constant surveillance, constant updating.

Although the NENYIAC study was sponsored, directed and financed by the Federal Government it was acomplished with State participation. Early in the study it was made clear to the Federal agencies concerned, that if the States were to participate they could do so only as an equal partner as far as policy, as far as scope, as far as findings and recommendations were concerned.

The CHAIRMAN. Would you repeat that statement?

Mr. TANI. Early in the study it was made clear to the——

The CHAIRMAN. Early in what study?

Mr. TANI. In the NENYIAC, early in the NENYIAC study, the New England-New York Inter-Agency Committee study, it was made clear to the Federal agencies concerned that if the States were to participate they could do so only as an equal partner, as far as——

The CHAIRMAN. Who made that clear, Mr. Tani?

Mr. TANI. It was made clear partly by the States that had been requested to participate in this study and by agreement of the Federal agencies that were concerned so that——

The CHAIRMAN. Made clear by the States to the Federal Government, that if the States participate in the study?

Mr. TANI. Right.

The CHAIRMAN. It would be on what basis?

Mr. TANI. It would have to be on the basis of equal partnership, that is, so that they would meet jointly, the State representatives, Federal representatives, to consider all measures related to the policy, general policies, that were being followed in the scope of findings, in the recommendations that came out of that, and this was somewhat an insistence on the part of the State in that they wanted to participate but they did not want to participate, you might say on, a second-class position but rather on an equal basis.

So, consequently, the NENYIAC committee, when it was finally organized as a working group, it was made up—that is, the committee itself was made up both of Federal agencies and representatives of each of the States.

This was the equal partnership principle that was developing and I think this is important as it relates to this Northeastern Resource Committee which I am trying to explain.

The CHAIRMAN. Since it was not a policymaking commission, since it was created purely for the purpose of surveying resources of America, and since its purpose was to gather information and since the States were under the law creating the participants in it, I am having a little difficulty understanding the status that eventually was developed.

Are you telling me when this interagency committee was set up the States declined to participate in being represented on it until the Federal agencies agreed that the representatives of the States would have equal authority in determining what went into the report.

Mr. TANI. That is correct, sir. That is correct.

What I mentioned, the word "policy" perhaps I use it rather loosely. It was the exercise of policy as regards the actual programing, the methodology, and so forth, not policy on a broader Federal level, you might say, or a State level, but rather policy in the working results of the agency itself.

The CHAIRMAN. Was that the case to determine what information came back to the Congress?

Mr. TANI. Yes, to a very large extent. That is, there was a joint agreement.

The CHAIRMAN. Did they thereby have some kind of a board of censorship?

Mr. TANI. I do not believe so. I do not think any censorship occurred here but rather, I think it resulted in a better understanding between agencies and virtually unanimous agreement on most of the findings because of this interchange of ideas and so forth. It was an excellent experiment and illustration of the fact that State agencies or State governments could work jointly hand in hand with the Federal Government in determining these types of things.

The CHAIRMAN. After the States had told the Federal Government they would participate only in one way and the Federal Government had agreed to it, it became unanimous. I am not critical. I am just learning. I am against any other States having anything that Oklahoma has not. I am just educating myself. You know, I am a beneficiary of this committee, and you are making a valuable contribution, and I am grateful.

Mr. TANI. I think you will find this experiment—and it was an experiment—pioneering effort in Federal-State relations relative to this subject matter, that it is going to have an impact elsewhere in the country. We think that this effort has demonstrated it is possible to set up groups, regional groups of State and Federal agencies, who can work closely together on an interchange of ideas and finally come up with policies that are acceptable.

The CHAIRMAN. But this commission was not set up as a policy commission.

Mr. TANI. No. All right, I would be happy to strike out the word "policy" and leave it to——

The CHAIRMAN. I am not suggesting that you strike out anything. I am just listening to the information you are giving me with gratitude and benefit.

Go right ahead.

Mr. TANI. Thus, the committee became a partnership of seven Federal agencies and seven States. This is the NENYIAC that I still am referring to.

Now the NENYIAC report and study was a significant milestone, we feel, in the evaluation and appraisal of the resources of a region. It was even more significant in the development of the concept of Federal-State relations. That was the point that I was getting at.

Now the Northeastern Resource Committee which was an offshoot of this thing, has been functioning continuously since February of 1957. It holds meetings monthly and has sponsored resources conferences in each of the six New England States. It is now in the process of establishing working committees or task force committees which will bring in other Federal agencies, other State agencies, and private interests. You will hear more about the organization of these task force committees tomorrow.

Now one of the significant elements of the organization of the Northeastern Resource Committee is that it demonstrates the workability of a Federal-State interagency group. Serving on the committee are representatives of each of the six New England States appointed by the respective Governors, and seven representatives of Federal agencies which I will not bother to enumerate. But they were the same agencies who were involved principally in the NENYIAC study.

Now to give this committee, this Northeastern Resources Committee, which I say is of an informal nature at the present time—to give this committee a legal and continuing status as well as a definite project—it operates on no budget at all at the present time——

The CHAIRMAN. I would like to have the specification of that put into the record.

Mr. TANI. What?

The CHAIRMAN. I would like to have the directions and specifications of that put into the record and I will turn it over to the Treasury Department.

Mr. TANI. There are expenses that are incurred, of course. These are incurred by the individual member agencies.

The CHAIRMAN. I can use my imagination on what the expenses are. I am just trying to get into the record the directions of how to operate such an effort without a budget.

Mr. TANI. So far, it has continued for the last 2 years on no formal budget.

The CHAIRMAN. We operate down in Washington sometimes without the money but never without the budget.

Mr. TANI. We do not have a formal budget.

The CHAIRMAN. As I take it you operate with the money but without the budget.

Mr. TANI. To give this committee legal and continuing status, what I started to say—as well as a budget, compact legislation has been introduced in each of the six New England States. In other words, this thing needed more than this informal arrangement to meet with official status, legal status, which compact would establish a Federal-State interagency committee. I emphasize that—the Federal-State interagency committees, or the commission, rather—the legislation has been adopted in four of the six New England States. Maine and Vermont so far have abstained. However, four States have adopted it.

According to the compact legislation only three States are required under the compact agreement or in the body of legislation to make the commission a legal authorized agency.

Even though Maine has not yet acted favorably on the adoption of this compact legislation it will continue to be a member on an informal status of this group in order to sit in and keep up to date with the proceedings involved. This again is by agreement of all the member agencies. The same would hold true of Vermont.

The important thing is that legislation will be introduced in the forthcoming session of Congress which will seek ratification of this compact together with a congressional directive or agreement which will permit the several Federal agencies to become partners in this compact. This again is in the field of pioneering.

The question of the constitutionality of such intermingling of State-Federal functions will doubtless be raised because it has not been done before.

While we agree that this is a pioneering venture in the field of Federal-State relations, we do feel, however, that as has been demonstrated in this region on a less formal basis, that is, on the basis of business, Northeastern Resource Committee, that this form of regional resource committee is one of the ways in which the separate interests and responsibilities of both the Federal Government and the State governments and the coordination of water and related land resources plans and policies can be enhanced.

It might well set the pattern for other regions in the country. We urge your careful consideration of this legislation when it comes before you.

I might add here that it was our understanding that on the Delaware River Basin some of the new legislation which would establish a Delaware River compact was patterned somewhat after the type of thing that we are doing, that is, a joint Federal-State commission.

Thank you.

Senator MUSKIE. I think to clarify the chairman's information on this point relative to budgets, there was no budget for this and there is no budget for this Northeastern Resource Committee. Actually what this committee is, is simply an informal meeting on the regular basis of agencies of the Federal Government and of the States concerned.

Their agencies, I take it, cover their travel, per diem, as to the State representatives, because there is no State budget, either. I do not know how the committee has been able to work at all under this financial arrangement.

I think it is due solely to the fact that the committee is convinced that this is a worthwhile sort of thing to do and has been willing to put up with the inconveniences and frustrations of doing it on an informal basis.

The primary function of the committee, the primary purpose, was to undertake on an informal basis initially and now on a formal legal basis the continuation of the work that has been done by the NENYIAC group.

Mr. TANI. Mr. Chairman, I could submit for the record, if you think it desirable, copies of the Federal interagency committee charter which gives the authority to the Federal agencies to participate in this, plus a copy of the agreement that was reached by the six New England Governors.

The CHAIRMAN. I think that would be very good.

Mr. TANI. I will do that sir.

(The information referred to follows:)

NORTHEASTERN RESOURCES COMMITTEE AGREEMENT

This agreement entered into this ------ day of ---------- 1957, by and between the States of Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont, through their respective Governors.

Witnesseth that:

Whereas, on the 26th day of May 1954, the President of the United States by letter to the Secretary of the Interior approved the Interagency Agreement on Coordination of Water and Related Land Resources Activities submitted by the Department of Interior to the Director of the Bureau of the Budget. The purpose of said agreement was to provide improved facilities and procedures for the coordination of the policies, programs, and activities of the Departments of the Interior, Agriculture, Labor, Commerce, Health, Education, and Welfare, the Army and the Federal Power Commission in the field of water and related land resources investigation, planning, construction, operation, and maintenance; to provide means by which conflicts may be resolved and to provide procedures for coordination of their interests with those of other Federal agencies in the water and related land resources field. Under this agreement there was created the Interagency Committee on Water Resources; and

Whereas, on June 29, 1956, the said Interagency Committee on Water Resources adopted a charter for a Northeastern Resources Committee as follows:

"1. PURPOSE

"It is the purpose of this agreement to provide in the northeastern region improved facilities and procedures for the coordination of the policies, programs, and activities of the States and Federal agencies in the field of water and related land resources investigation, planning, construction, operation, and maintenance;

to provide means by which conflicts may be resolved; and to provide procedures for coordination of their interests with those of other Federal, local governmental, and private agencies in the water and related land resources field.

"2. ESTABLISHMENT

"(*a*) For this purpose there is established a Northeastern Resources Committee of State and Federal representatives operating on a basis of coequality. The committee shall be composed of representatives of any of the following States and Federal agencies which indicate a desire to participate: the States of Maine, New Hampshire, Vermont, Rhode Island, New York, and Connecticut, the Commonwealth of Massachusetts, and the Federal Departments of the Interior, Commerce, Labor, Agriculture, Health, Education, and Welfare, the Army, and the Federal Power Commission.

"(*b*) The Governor of each of the States desiring to participate shall designate the member of the committee for his State.

"(*c*) The Federal members on the committee shall be designated by the head of the Federal agency they are to represent and shall preferably be resident in the area.

"(*d*) Committee members may designate other officials to serve as alternates.

"(*e*) Federal agencies will participate in the work of the committee in accordance with their respective responsibilities and interests and with the intent of the 'Interagency Agreement on Coordination of Water and Related Land Resources Activities' as approved by the President on May 26, 1954.

"(*f*) When appropriate, other Federal, State, public, and private agencies will be asked to participate in committee meetings and to appoint representatives to specific subcommittees, in order that the work of the committee may be coordinated with the related work of all agencies.

"(*g*) A chairman shall be elected annually from and by the State and Federal members; provided that, except by unanimous consent of the members, the chairman shall not succeed himself.

"(*h*) The State or agency which provides the chairman shall also provide the secretary for the committee and the necessary administrative support incident to his tenure.

"(*i*) The committee shall have such additional staff assistants as the members may, upon request, assign to it.

"3. METHOD OF OPERATION

"(*a*) Meetings will be held as often as required, at times and places appropriate to the agenda and normally at intervals of not more than 2 months. Meetings normally will be open to the public and the press. Special executive sessions of the committee may be held at the call of the chairman.

"(*b*) The committee shall serve as a means for coordinating activities and achieving accord or agreement, at the regional level, among its member States and agencies on issues or problems which may arise. Staff work necessary to coordinate activities and present the essence of any issues or problems to the committee shall be carried on by the committee staff or by subcommittee as appropriate and as may be appointed by the chairman and approved by the committee.

"(*c*) Minutes of meetings will be prepared to record the actions and recommendations of the committee. The minutes will be primarily for use of the participating agencies, but a wider distribution may be made when considered desirable by the committee.

"(*d*) The committee may establish further procedures governing its operations as required.

"4. RESPONSIBILITIES

"(*a*) It will be the responsibility of the committee to establish means and procedures to promote coordination of the water and related land resources activities of the States and of the Federal agencies; to promote resolution of problems at the regional level; to suggest to the States or to the Interagency Committee on Water Resources changes in law or policy which would promote coordination, or resolution of problems; and in its discretion to communicate with the Interagency Committee on Water Resources on any matters of mutual interest.

"(*b*) The efforts of the committee on coordination of work and resolution of conflicts will be directed toward all State and Federal activities involved in their respective water and related land resources development responsibilities and shall include coordination of the following:

"(1) Collection and interpretation of basic data.

"(2) Investigation and planning of water and related land resources projects.

"(3) Programing (including scheduling) of water and related land resources construction and development.

"5. GEOGRAPHICAL JURISDICTION

"The geographical area to be encompassed within the sphere of committee influence will include the entire States of Connecticut, Rhode Island, Massachusetts, Vermont, New Hampshire, Maine, and New York, including Passamaquoddy Bay, Long Island Sound, and the Atlantic Ocean contiguous to the Northeastern region."

Whereas, being cognizant of the mutual benefits to be derived from the objectives of said charter, the Governors of the States of Maine, New Hampshire, Vermont, Rhode Island, New York, Connecticut, and the Commonwealth of Massachusetts, hereby subscribe to theo bjectives of said charter and desire to implement these objectives in the manner set forth therein; and

Whereas it will be mutually advantageous to cooperate with the Federal agencies set forth in said charter.

Now, therefore, The parties hereto agree to carry out the terms and conditions of the said charter and to cooperate with the Federal agencies therein set forth.

In witness whereof, the parties hereby affix their signatures and the seals of their respective States.

STATE OF MAINE,
——— ———, *Governor.*
Attest: ——— ———, *Secretary of State.*

STATE OF NEW HAMPSHIRE,
——— ———, *Governor.*
Attest: ——— ———, *Secretary of State.*

STATE OF VERMONT,
——— ———, *Governor.*
Attest: ——— ———, *Secretary of State.*

COMMONWEALTH OF MASSACHUSETTS,
——— ———, *Governor.*
Attest: ——— ———, *Secretary of State.*

STATE OF RHODE ISLAND,
——— ———, *Governor.*
Attest: ——— ———, *Secretary of State.*

STATE OF CONNECTICUT,
——— ———, *Governor.*
Attest: ——— ———, *Secretary of State.*

STATE OF NEW YORK,
——— ———, *Governor.*
Attest: ——— ———, *Secretary of State.*

NORTHEASTERN RESOURCES COMPACT

The northeastern part of the United States is by virtue of its geographic location and other characteristics a great natural resource area. The increasing intensity of use of these resources, particularly water, requires coordinated planning for effective resource management and the orderly growth of the region. An inventory of these resources was published in the New England-New York Interagency Committee 46-volume report after 4 years of work and at a cost to the Federal Government of over $6 million.

At a meeting of the Governors of the New England States in 1956 it was agreed to create in cooperation with the Interagency Committee on Water Resources of the Federal Government a Northeastern Resources Committee for the purpose of implementing the New England-New York Interagency Committee report and coordinating the development of the resources, particularly the water and related land resources of the northeastern area.

At the present time the Northeastern Resources Committee is made up of a representative from Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut, and a representative of the Federal Departments of Interior, Commerce, Labor, Agriculture, Army, Health, Education, and Welfare, and the Federal Power Commission, all operating on a basis of equality.

The formulation of this committee has resulted in better coordination of the efforts of the States and the Federal agencies for the development of the water and related land resources of the region.

After carefully exploring the types of organization best suited to carry on this activity, it was decided that a compact should be entered into for the creation of a permanent Northeastern Resources Commission. Membership would consist of a single representative from each State and seven Federal agencies.

The Commission's principal functions will be to coordinate and promote resource development. It will not be an operating agency. Action cannot be taken unless approved jointly by a majority of the State representatives and a majority of the Federal representatives.

At a meeting of the New England Governor's conference held in Hartford, Conn., on March 2, 1959, the Governors of all of the New England States reviewed the proposed compact and agreed unanimously to introduce enabling legislation in each of the States to authorize the States to enter into such a compact.

Compact legislation was subsequently introduced into the Legislatures of the States of New Hampshire, Maine, Connecticut, Rhode Island, and Massachusetts. Connecticut, Rhode Island, New Hampshire, and Massachusetts have approved it. In Maine the compact was refered to a special study commission. It will be introduced into the Vermont Legislature for consideration at the next session of that body.

The compact is unique in that it creates a joint commission of the Federal agencies and the States. It provides that, if the legislatures of three of the States in the area approve the compact, the necessary legislation will be introduced into Congress for approval. That there will be considerable controversy is anticipated in Congress before approval can be secured for this type compact. Pending the enactment of compact legislation, the interim Northeastern Resources Committee continues to function to coordinate the development of water and related land resources of the New England States. At the present time the committee is engaged in establishing new technical subcommittees to assist in the development of these resources.

[Editorial board: Charles H. W. Foster, James E. Healey, Bryant R. Chaplin, Mary C. Baker, Clarence I. Sterling, Jr.]

Senator MUSKIE. Are there further questions?

Thank you.

Mr. COBB. Next, I would like to introduce Erlon Newdick, commissioner of agriculture for the State of Maine.

STATEMENT OF ERLON NEWDICK, COMMISSIONER OF AGRICULTURE, STATE OF MAINE

Mr. NEWDICK. Senator Kerr and members of the committee, our department is already a party to a brief which has been filed with your committee.

I am, however, asking your permission to just add a short statement to what has already gone in.

Agriculture as an industry uses a tremendous amount of water in taking care of its animals, and it has been estimated that in our crops alone we use about 6 million gallons of water a day to get maximum growth. Up to this time, irrigation has been practically nonexistent. There are few farmers who have found that they could add to the quality or quantity of their crops by additional water.

For the record, I would like to make the following observation: As urban development takes place in southern New England, I expect that there will be some of the farmers from that section move into

our State. There are people who are going to farm some place, somewhere, regardless of the fact that the income from the land is not as high as it probably is in industry. The type of farming that these southern New England people have been used to, especially in the field of vegetables and small fruit production, will require more irrigation.

It looks as though 30 years from now Maine could very well be a smart agricultural State, and I feel sure that our neighbors in recreation, wildlife, power development, as well as all other water users, will let us sit in with them when a program of water use is being planned for the benefit of all of our people.

There may be a decline in land use, but the yield per acre continues to be higher as time goes on.

That is all I have to add.

The CHAIRMAN. Senator Hart.

Senator HART. Commissioner, are there many soil conservation districts organized in Maine?

Mr. NEWDICK. There 15 or 16, Senator, one or the other yes. We have a very active program of soil conservation. We have an exceptionally fine Federal leader, we think, and we are doing a lot of good work.

Senator Moss. Is there some work going on now in irrigation? I understand it has been almost nonexistent.

Mr. NEWDICK. There are only a few farms that have equipment. I am running one farm for the State that has about 20,000 feet of pipe that we use.

The CHAIRMAN. About how much?

Mr. NEWDICK. About 20,000 feet, a small operation, nearly 110 acres of potatoes, but we are irrigating that little farm. The bulk of our irrigation is in southern Maine where the vegetable folks are very active, the vegetable growers.

Senator Moss. Do you spray mostly or run it down the rows?

Mr. NEWDICK. Run it down the rows.

Senator HART. Mr. Chairman?

The CHAIRMAN. Senator Hart?

Senator HART. Has Maine begun any of these small watershed projects?

Mr. NEWDICK. I do not think so. I am not sure but I do not think so, Senator. Mr. Oliver is here and he could answer that.

The CHAIRMAN. I see somebody sitting there shaking his head. I think that may be the man you referred to.

The answer is no?

Mr. OLIVER. Yes, sir. The answer is no.

Senator MUSKIE. Dick, I notice that the Governor indicated in his statement that agricultural acreage by 1980 will be diminished by about 30 percent. Is that based on any projections with which you are familiar?

Mr. NEWDICK. That is the way we are heading right now just like everyone else. We are heading down the grade as far as acreage is concerned, but we are still producing more crops than we ever did. Where we go from here and what happens to the soil bank and a few other items I do not know.

We have taken a lot of land out of production. That is right.

We are in the soil bank quite heavily.

Senator MUSKIE. Have you any figures on how much land was taken out of production in recent years, say, in the past 10, 15, 20 years?

Mr. NEWDICK. I do not have that, Senator. But I can get it for the record, if you would like to have me from the ACP just what has been taken out.

Senator MUSKIE. Yes.

The CHAIRMAN. Yes. Put it in the record.

(The information referred to follows:)

Cropland not harvested and not pastured:

Year	Acres	Year	Acres
1954	240,692	1940	123,062
1950	267,214	1935	65,518
1945	100,244	1930	97,751

NOTE.—At present there are 99,035 acres in the soil bank in Maine.

The CHAIRMAN. Approximately how many acres at this time are being farmed in Maine?

Mr. NEWDICK. It is sickening for me to sit here and tell you that I just cannot remember.

The CHAIRMAN. No, sir. If I were sitting there it would probably be my answer. I am sure that you have somebody on your staff that I always have to have and try to have who can answer questions like that for me.

Mr. NEWDICK. I will file that, too, with the committee.

The CHAIRMAN. Put that in the record, will you?

Mr. NEWDICK. I will.

(The information referred to follows:)

In October 1954, there were 3,614,242 acres in farmland in Maine.

The CHAIRMAN. What are the principal crops of your farms?

Mr. NEWDICK. We have an agricultural income, gross income, now of about $208 million. Our two top moneymakers are poultry and potatoes. They run up around $60 million and $70 million, depending on the year, and dairying is our outstanding crop that we live with year after year, and we seem to be a little more sure of that.

We have, of course, many other smaller crops but poultry, potatoes and dairying are our three main crops.

The CHAIRMAN. You mentioned vegetables. What are they primarily, or is there some specific crop, or is it just vegetables generally?

Mr. NEWDICK. It is a very localized area down in Cumberland County, not a large area, but it just happens to be a good vegetable area and not big acreage, Senator.

The CHAIRMAN. Maine has not gone into production of beef cattle, has it?

Mr. NEWDICK. That is a very controversial issue in our State. There are folks who think we ought to have a King ranch here and there are other folks who think it should be left to the discretion of the farmer who knows his own farm better than anybody else, and I am in the latter group.

The CHAIRMAN. I am in the latter group. I was not trying to generate a controversy. I was just trying to get a little information. I am in the angus business and I have not seen any angus cattle since I have been here. I wonder how it happened people with such great intelligence as I know the farm people in Maine have have not seen fit

to avail themselves of that very valuable agricultural economy of any State. I was just curious.

Mr. NEWDICK. We do have some angus but I know I will not hurt the Senator's feelings when I say most of our beef cattle are white-faced.

The CHAIRMAN. You tell those boys to keep them because they are going to be in great demand 25 years from now—in the zoos.

Senator Moss. We are always glad to have a fair and objective chairman.

Senator MUSKIE. Are there any further questions, Bob?

Thank you, Mr. Newdick, very much.

The CHAIRMAN. You know you impress me enough. I do not want to go any further.

Mr. COBB. I want to introduce Richard J. McMahon, Commissioner of the Public Utilities Commission.

The CHAIRMAN. Mr. McMahon.

STATEMENT OF RICHARD J. McMAHON, COMMISSIONER, PUBLIC UTILITIES COMMISSION, STATE OF MAINE

Mr. MCMAHON. Honorable Chairman and Senators and Congressman Oliver; I have a verified statement here. It could be submitted and typed into the record, and I have plenty of available copies for the audience if they would like them to follow along. We are running quite slowly. I could shorten this statement down.

Senator MUSKIE. I think it would be well if you read it all.

The CHAIRMAN. We can put the statement in the record and you can proceed on the basis that you would like to.

Mr. MCMAHON. My name is Richard J. McMahon and I am a member of the Maine Public Utilities Commission. The offices of the commission are located in the State House, Augusta, Maine.

The Maine Public Utilities Commission is made up of three commissioners, one of which is designated as chairman by the Governor. Since, for the past 2 years I have been the commission representative on the Maine Inter-Agency Resource Committee, the chairman has asked me to give this statement on behalf of the commission.

The investigation of the water resources of the State was started by the State in 1867 and has been a continuous cooperative program with the U.S. Geological Survey since 1909. Investigations were generally confined to surface water until 1957 and a considerable amount of basic data, principally concerning the larger, power-productive streams was collected.

In 1957 the public utilities commission recognized the need for investigation of the ground waters of the State and a small program of this nature was started in cooperation with the Geological Survey. Increasing demands for data, particularly with which has been analized and interpreted, indicate that the current program of surface and ground water investigations must be expanded, and stepped up.

Furthermore, little data is available on the physical and chemical qualities of the natural waters of the State and this phase of investigation should be started immediately. The Commission realizes the need for immediate expansion of its investigation and will do so as funds are made available, by the legislature.

The Maine Public Utilities Commission has jurisdiction over all utilities operating within the State of Maine. I might say this is one of the three States in the country that do regulate water companies or water districts. This jurisdiction concerns the approval of rates and securities and matters of service. In Maine, we have 166 water utilities consisting of 95 water companies, 53 water districts and 18 municipal departments. Incidentally, we had the first water district in the country that was originated in the State of Maine, the Kennebec Water Research.

The CHAIRMAN. I would like to understand this. You are talking here about utilities that provide water in municipal or urban areas.

Mr. MCMAHON. That is correct, sir.

The CHAIRMAN. Do I understand from this that there are 18 of your municipalities which own their own water systems and the other municipal areas in the State are served by private water utilities?

Mr. MCMAHON. There are 18 that have municipal departments, such as fire or police departments in the district, or a street department. There are 53 that have a water district that is in effect owned by the taxpayers in those municipalities.

The CHAIRMAN. I see. What you refer to here as a water district is an area in which the water utility is publicly owned?

Mr. MCMAHON. That is correct. It is quasi-municipal function of the charter set up under either an authority or district type.

The CHAIRMAN. For purposes of identification those are the areas where the water utilities are publicly owned and the others being 95 in number are privately owned.

Mr. MCMAHON. That is correct, sir.

The CHAIRMAN. Thank you.

Mr. MCMAHON. Also, to a limited extent the commission exercises jurisdiction over six sewage districts. There are several other sewage districts operating in the State at the present time, over which this commission has no jurisdction.

The CHAIRMAN. At this point, would you indicate, if you would, why the commission does not have jurisdiction over those sewage districts?

Mr. MCMAHON. The legislature has not declared a sewage district a public utility and they do not come under our general public utility act.

The six over which we do have jurisdiction, we have jurisdiction in about four of them over lakes and some over the future planning of it, and we get into the matter of sewage districts in two other companies that are run jointly by our water company that have two departments. We have to separate the plant on a cost basis for determining the rate of return for those companies.

Senator MUSKIE. Am I correct in understanding that your jurisdiction over the six are granted in the charters?

Mr. MCMAHON. That is correct.

Senator MUSKIE. And in others no jurisdiction is given?

Mr. MCMAHON. No. And there are several others.

The other jurisdiction was the District of Maine and the public utility commission was left completely out of this.

So we have no jurisdiction whatsoever over them. They are controlled by the local government officials in the town.

In the State of Maine we have some 21 cities and over 400 towns or communities. Most of these communities are very small. About 70 of the small villages have no public water supply systems. There are some small towns that have very old and inadequate systems operating now.

The Maine Public Utilities Commission believes that some Federal assistance would help these small villages obtain good potable pure water. This assistance could be similar to that furnished to the telephone and electric users in the rural areas by the Rural Electrification Administration.

The only help that we know of now by the Federal Government is the Housing and Home Finance Agency of the Community Facilities Administration authorized under Public Law 560 by the 83d Congress. This program provides advances for public works planning.

This is a very helpful program which supplies the initial funds needed to explore and plan a water supply system. But due to the ever-increasing high cost of construction, and the high cost of financing, the small villages and old inadequate systems need more help.

The commission recently approved the rates for a new public water supply system in a small village in Maine. This new district will serve approximately 75 customers. The average investment per customer is about $3,000. This is about 10 times the average investment in older systems in the State. The new rate for a fully plumbed house in this village will be $80 per year for water.

The following is general information on this water district and shows for comparative purposes what could happen, if the small villages were given some Federal assistance in their financial problems.

On page 5 is the information on the town of Bowdoinham which has a population of around 1,039. In Bowdoinham the ownership remains in the people of the town. You notice down there about 47 percent of the revenue will come from fire protection which is a high percentage but we feel it is reasonable under the conditions of the town.

It shows down in the estimated expenses that the bond interest and sinking fund requirements which a debt service about 65 percent of the operating revenue or expenses of the company will be for debt services.

If it were possible for a district such as this to borrow money at 2 percent revenues could be reduced by around $5,600 or approximately 30 percent.

The CHAIRMAN. Could it be reflected in savings to the users or more rapid payoff of the investor.

Mr. MCMAHON. I would say under our policy here, it would be reduced rates to the users because water property is good for 100—transmission mains and distribution are longlife and we try to make the district or company pay off the debt over the life of the property.

Under the charter in most of the lake districts in Maine we have a sinking fund requirement where they pick up what they want between 1 and 5 percent. The district takes 1 percent on the sinking fund.

If it were not for the high cost of debt service I believe that most of the smaller villages would have adequate water supply systems.

We believe that if our rural villages in Maine are to prosper and grow they must have good water available. We further believe that we in Maine are fortunate in having excellent sources of supply of water for the future, except for some small island and coastal villages, where we feel desalinization may provide a better source of supply.

Maine is fortunate in having many powersites and storage areas on its major river systems. These have been gradually developed by private enterprise since colonial times. At the present time most of the economically feasible sites have been developed. Maine has hope in the future of the development of a tidal power project in the Passamaquoddy Bay area. We can grow industrially and in population, only so long as we keep our water supplies clean and adequate. As soon as all the people and all the various interests in this State realize that water is the resource that will make this State great, then we are on our way to a more progressive future.

The State and Federal Governments must first determine to the full extent what our water resources are, then assume control and management of these resources for the mutual benefit of all.

Now as to the appendixes, appendix 1 is a list of water companies in the State of Maine, showing whether it is a district, municipal, or privately owned; the number of customers served.

Appendix 2 is the list of towns in the State of Maine having a population in excess of 750 without any public water supply system. Although some of these towns are listed here and show a population of 1,000 to 1,500 it would not be economically feasible to have a water district in these because there is no principal village in the township or the plantation.

Appendix 3 is a list of water utilities in the State of Maine showing the source of the supplies and the form of treatment. It is very interesting to know and helpful in the State of Maine you will notice in the form of treatment that a lot of them show just chlorination and quite a few of them show no treatment whatsoever.

If there are any questions and if I can answer or the staff can answer them we will be glad to.

I might say, Senator, I notice, and maybe it is on account of the record, that you have outdrawn the attendance that we had at the recent railroad petition for discontinuance of trains for the State of Maine. So I feel water is closer to the hearts of the people in the State of Maine than the railroads were, apparently.

The CHAIRMAN. I did not quite understand that.

Mr. MCMAHON. You have a larger attendance here at this hearing than we had when we were holding hearings on the abandonment of railroad passenger trains in the State of Maine.

The CHAIRMAN. Well, I appreciate your statement. I think it is informative and well presented.

I would like to get a little more information in this record. You told us here how many power companies are in the State, how many furnishers of the electric power are under your jurisdiction—or I thought you did.

Mr. MCMAHON. No, I did not, Senator. It is in the brief, the green sheet—you have referred to the green sheet—that was supplied to the committee prior to the hearing. There was quite a bit of information on the power and water.

Senator MUSKIE. This green sheet to which you refer has been referred to the committee staff earlier. Is is part of the record yet?

Mr. SCHAD. It will be included with the other State comments in a separate publication.

The CHAIRMAN. How many utilities are there?

Mr. MCMAHON. Just the water companies I told you, sir. I do not have the figures available.

We have approximately 50 telephone companies, about 30, or in the area of 30, I would say, electric operating companies. We have some distributing companies. I think we have three co-ops up here that are just distributing companies. They do not come under our jurisdiction.

The CHAIRMAN. You are not responsible for the impressions I get. But I thought I heard you talk about the number of companies that had developed waterpower. I thought you made some reference to that.

Mr. MCMAHON. They are on sheet 6, I think. I say that private enterprise has developed hydropower in the State of Maine up to——

The CHAIRMAN. Did you not refer to that somewhere in one of your appendixes or in your statement?

Mr. MCMAHON. No. These appendixes are all water companies.

The CHAIRMAN. The water companies?

Mr. MCMAHON. Water companies.

The CHAIRMAN. How many utilities approximately are there that use hydroelectric power in their distribution during the service to the customer?

Mr. MCMAHON. I would say that most of the power companies in the State in one form or the other, of the power in the State of Maine, about 50 percent of this is developed by hydro and a lot of the smaller companies purchased by us from the four or five large companies that we have. They distribute it. But about probably 20 power companies in the State have hydro developments.

The CHAIRMAN. Do you have a tabulation you can put into the record showing the average rates paid for power by domestic and industrial users in Maine?

Mr. MCMAHON. No, sir. I do not think we have. I think you have probably as good a figure as you need. That type would be in the Federal power reports by areas. I do not think we have anything that you could say by the average power users what they pay per kilowatt, whether you are talking about residential or commercial——

The CHAIRMAN. As we look forward to not only the increased use of water but increased industrial production, we are aware of the limiting factors, one of which is electric power. I believe it is reasonably accurate to say that last year we probably consumed 16 times as much electric energy in our country as we did in 1920. Industrial engineers advise us that at the present time the rate of increase in the demand for electrical power is such that the requirement for it will double in the future about every 7 to 10 years.

That being the case, as we forecast the requirements for electric power, we are aware of an indication that 40 years from now the country might require 16 times as much as it used last year, and both from the standpoint of developing as much information as possible in this record and also from the standpoint of information generally

for the Senate I wonder, for instance, in this area, what your judgment is as to how that additional electric energy will be provided, what will be the source of it.

Mr. McMAHON. For the record we could submit—we would have to make a study of what the needs or try to determine what the needs would be in the State of Maine from the past growth. Our growth is just about equal to your national pattern. In 10 years it will double. I would be glad to submit that for the record before January 15.

(The information referred to follows:)

PUBLIC UTILITIES COMMISSION,
STATE OF MAINE,
Augusta, January 11, 1960.

Senator ROBERT S. KERR,
Select Committee on Water Resources,
Senate Office Building,
Washington, D.C.

DEAR SENATOR KERR: Enclosed herewith is a breakdown of electric utility generating capacity, 1958 actual production and estimated normal hydro capacity as requested by your committe at the hearing held in Augusta, Maine on December 7, 1959.

The Maine Public Utilities Commission does not have records pertaining to industrial hydro capacity and production. We would refer your committee to chapter II, section VII, page 4 of the New England New York Inter-Agency Committee report and to the Federal Power Commission's "Electric Power Statistics on Production of Electric Energy in the United States."

For the matter of electric energy costs in the State of Maine, please refer to the Federal Power Commission's National Electric Rate Book, Maine section and to pages 26, 27, 79, and 90 of the Federal Power Commission's FPC R–58 "Typical Electric Bills 1959."

I think this is all the information that you requested at the December 7 hearing. If there is any other data that we can furnish, please do not hesitate to contact us.

Very truly yours,

RICHARD J. McMAHON, *Commissioner.*

Utility generating capacity and output by companies

Company	Capacity, kilovolt-amperes				1958 production, mlowatt-hours				Estimated normal hydro-production mlowatt-hours
	steam	Hydro	Internal combustion	Total	Steam	Hydro	Internal combustion	Total	
Bangor Hydro-Electric Co	31,236	46,856	22,800	100,592	56,779	246,189	1,790	304,758	222,700
Central Maine Power Co	349,169	315,039	8,218	672,426	630,504	1,362,982	657	1,994,143	1,188,600
Cornish & Kezar Falls Light & Power Co		438		438		2,100		2,100	2,000
Casco Bay Light & Power Co			2,202	2,202			2,681	2,681	
Kennebunk Light & Power District		444		444		3,447		3,447	3,000
Lubec Water & Electric District		120	1,841	1,961		772		3,719	700
Madison Electric Works Department		450		450		3,447	2,947	3,447	3,000
Maine Public Service Co	22,904	2,875	12,681	38,460	45,282	8,230		53,512	7,500
Vinalhaven Light & Power Co			780	780			1,668	1,668	1,500
Rangeley Power Co		585	[1] 360	945		1,960	871	2,831	800
Total	403,309	366,807	48,882	818,698	732,565	1,629,127	10,614	2,372,306	1,429,800

[1] Estimated.

The CHAIRMAN. It would be a great interest to know in the matter of atomic power for electric energy. It is certain that atomic power will be used in some areas of the country sooner than in others. And I was wondering if the power potential of Maine and New England is such that it might be in one of the first areas that will turn to atomic energy as a source of its increased power.

Mr. MCMAHON. I think that some of the utilities people are here today who are more familiar with the Yankee project down in Massachusetts than I am. The Central Maine Power Co., which is our largest power utility in the State of Maine, is a member of the Yankee atomic development, and I think they are participating at the rate of around 9 percent on investment and expect a 9-percent return on the development of power.

The CHAIRMAN. I would like for the staff to put in the record at this point the latest available report—I guess it would be from the Federal Power Commission—showing the comparative rates paid for electric power in this and other areas in the Nation.

(See map on p. 2844.)

The CHAIRMAN. Thank you very much.

Senator MUSKIE. I wonder if I might ask a question here.

Are there any major or undeveloped hydrosites in Maine other than Passamaquoddy and Rankin Rapids and Big Rapids and Lincoln School which we have already discussed somewhat this morning?

Mr. MCMAHON. The only one that Mr. Hayes—who, incidentally is from the public utilities commission—he works in cooperation with us and is one of the Federal men working with the U.S. Geological Survey. He tells me that probably the only economically feasible one that is not developed is the High Errol.

The CHAIRMAN. What?

Mr. MCMAHON. High Errol. It is between here and New Hampshire. It is on the New Hampshire area line.

Senator MUSKIE. What is the installed capacity potential of that site?

Mr. MCMAHON. There are some reports on that.

The CHAIRMAN. Is that a stream you refer to?

Mr. COBB. That is on the upper reaches on the Androscoggin River. You will see it over on the southwestern corner of the State.

Mr. MCMAHON. Mr. Paul Bean is here in the audience. He is the engineer on that river. He can probably give us the information that you need.

The CHAIRMAN. Did you say there is somebody here that can advise us of the power potential there?

Mr. MCMAHON. Mr. Bean is here.

(The prepared statement of Mr. McMahon follows:)

STATEMENT OF RICHARD J. MCMAHON, MAINE PUBLIC UTILITIES COMMISSION

My name is Richard J. McMahon and I am a member of the Maine Public Utilities Commission. The offices of the commission are located in the statehouse, Augusta, Maine. The Maine Public Utilities Commission is made up of three commissioners, one of which is designated as chairman by the Governor. Since for the past 2 years I have been the commission representative on the Maine Interagency Resource Committee, the chairman has asked me to give this statement on behalf of the commission.

The investigation of the water resources of the Sate was started by the State in 1867 and has been a continuous cooperative program with the U.S. Geological

Survey since 1909. Investigations were generally confined to surface water until 1957 and a considerable amount of basic data, principally concerning the larger, power-productive streams was collected. In 1957 the public utilities commission recognized the need for investigation of the ground waters of the State and a small program of this nature was started in cooperation withl the Geological Survey. Increasing demands for data, particularly that which has been analyzed and interpreted, indicate that the current program of surface and ground water investigations must be expanded. Furthermore, little data is available on the physical and chemical qualities of the natural waters of the State and this phase of investigation should be started immediately. The commission realizes the need for immediate expansion of its investigation and will do so as funds are made available.

The Maine Public Utilities Commission has jurisdiction over all utilities operating within the State of Maine. This jurisdiction concerns the approval of rates and securities and matters of service. In Maine we have 166 water utilities consisting of 95 water companies, 53 water districts and 18 municipal departments. (See appendix 1.) Also, to a limited extent the commission exercises jurisdiction over six sewerage districts. There are several other sewerage districts operating in the State at the present time, over which this commission has no jurisdiction.

In the State of Maine we have some 21 cities and over 400 towns or communities. Most of these communities are very small. About 70 of the small villages have no public water supply systems. (See appendix 2.) There are some small towns that have very old and inadequate systems operating now.

The Maine Public Utilities Commission believes that some Federal assistance would help these small villages obtain good potable pure water. This assistance could be similar to that furnished to the telephone and electric users in the rural areas by the Rural Electrification Administration. The only help that we know of now by the Federal Government is the House and Home Finance Agency of the Community Facility Administration authorized under Public Law 560 by the 83d Congress. This program provides advances for public works planning. This is a very helpful program which supplies the initial funds needed to explore and plan a water supply system. But due to the ever increasing high cost of construction, and the high cost of financing, the small villages and old inadequate systems need more help.

The commission recently approved the rates for a new public water supply system in a small village in Maine. This new district will serve approximately 75 customers. The average investment per customer is about $3,000. This is about 10 times the average investment in older systems in the State. The new rate for a fully plumbed house in this village will be $80 per year for water.

The following is general information on this water district and shows for comparative purposes what could happen, if the small villages were given some Federal assistance in their financial problems.

GENERAL INFORMATION

Town of Bowdoinham, Maine, population (1950 census) : 1,039.
Ownership of water system: Bowdoinham Water District.
Approximate number of domestic customers: 75
Water system constructed: 1959.
Water system investment: $232,000.
Bond requirement: $225,000 (20-year term with 1 percent sinking fund).

	Amount	*Percent*
Source of revenue:		
General	$6,900	36.5
Industrial	3,000	15.9
Fire protection	9,000	47.6
Total	18,900	100.0
Estimated expenses:		
Operation and maintenance	3,000	15.9
Depreciation at 1½ percent composite	3,525	18.6
Bond interest at 4½ percent	10,125	53.5
Sinking fund at 1 percent	2,250	12.0
Total revenue requirement	18,900	100.0

This shows that over 65 percent of the operating expenses of a small water supply system are for the cost of debt service.

Adjusted expenses, at 2 percent cost of debt:	*Amount*	*Percent*
Operation and maintenance	$3,000	22.6
Depreciation at 1½ percent composite	3,525	26.6
Bond interest at 2 percent	4,500	33.9
Sinking fund at 1 percent	2,250	16.9
Adjusted revenue requirement	13,275	100.0

Accordingly the revenue requirements would be reduced by $5,625 or about 30 percent. If it were not for the high cost of debt service, I believe that most of the smaller villages would have adequate water supply systems.

We believe that if our rural villages in Maine are to prosper and grow they must have good water available. We further believe that we in Maine are fortunate in having excellent sources of supply of water for the future, except for some small island and coastal villages, where we feel desalinization may provide a better source of supply. (See appendix 3.)

Maine is fortunate in having many power sites and storage areas on its major river systems. These have been gradually developed by private enterprise since colonial times. At the present time most of the economically feasible sites have been developed. Maine has hope in the future of the development of a tidal power project in the Passamaquoddy Bay area. We can grow industrially and in population, only so long as we keep our water supplies clean and adequate. As soon as all the people and all the various interests in this State realize that water is the resource that will make this State great, then we are on our way to a more progressive future.

The State and Federal Governments must first determine to the full extent what our water resources are, then assume control and management of these resources for the mutual benefit of all.

VERIFICATION

STATE OF MAINE
COUNTY OF KENNEBEC, ss:

Richard J. McMahon, first having been duly sworn, deposes and says that the foregoing statement is true and correct to the best of his information, knowledge and belief.

(Signed) RICHARD J. MCMAHON.

Subscribed in my presence and sworn to before me this 7th day of December 1959.

(Signed) ROY M. SOMERS, *Notary Public.*

(My commission expires March 10, 1962.)

APPENDIX 1.—*Maine water utilities*

[Code: D=district (quasi-municipal); M=municipal; P=privately owned]

Name of company	Code	Official	Address	Number customers
Addison Point Water District	D	M. H. Brown, chairman	Addison	46
Alfred Water Co	P	John B. Donovan, general manager	Alfred	157
Allen Water Co	P	Bion B. Tibbetts, manager	Columbia Falls	
Andover Water Co	P	Raymond Akers, president	Andover	126
Anson Water District	D	William G. Hartwell	North Anson	524
Ashland Water and Sewer District	D	Eugene A. Orcutt, superintendent	Ashland	242
Auburn Water District	D	L. K. Parker, superintendent	Auburn	7,163
Augusta Water District	D	Sidney S. Anthony, superintendent	Augusta	7,158
Bangor Water District	D	Donald P. Johnson, general superintendent	Bangor	10,328
Bar Harbor Water Co			Bar Harbor	1,517
Bath Water District	D	Maurice A. Libby, general superintendent	Bath	3,393
Belfast Water District	D	Philip L. Rackliffe, chairman	Belfast	1,331
Belgrade Power Co	P	Guy Tobey, owner	Belgrade	
Berwick Water Department	M	Paul J. Flynn, manager	Berwick	434
Bethel Water Co	P	E. A. Van Den Kerckhoven	Bethel	329
Biddleford & Saco Water Co	P	Harry Woorster, superintendent	Biddleford	9,409
Bigney, F. R	P		Greenville	
Bingham Water District	D	Donald Folsom, superintendent	Bingham	381
Blethem Spring Water Co	P	A. P. Stacy, owner	Dover-Foxcroft	
Boothbay Harbor Water System	M	Chester A. Swett, manager	Boothbay Harbor	2,021
Brewer Water District	D	Hartley E. Rider, general superintendent	Brewer	2,345
Bridgton Water District	D	Everard Wentworth, superintendent	Bridgton	625
Brooks Water District	D	Albert Payson, owner	Brooks	
Brownville Junction Water District	D	Reginald Call, general superintendent	Brownville Junction	332
Brownville Water District	D	Charles Foulkes, chairman	Brownville	
Brunswick & Topsham Water District	D	E. Boyd Livesay, superintendent	Brunswick	3,937
Buckfield Village Corporation Water Department	M	Ernest Buck	Buckfield	153
Bucksport Water Co	P	Harold S. Chase, assistant treasurer	Bucksport	582
Calais Water & Power Co	P	Ralph H. Eagan, superintendent	Calais	1,949
Camden & Rockland Water Co	P	Robert H. Varney, superintendent	Rockland	5,579
Canton Water District	D	Leo C. York, general superintendent	Canton	96
Caribou Waterworks Corp	P	K. P. Currie, manager	Caribou	1,804
Castine Water Co	P	Mrs. Lilliam M. Owen, president	Castine	268
Clinton Water District	D	Clarence Bessey, general manager	Clinton	261
Cold Spring Water Co	P	Ray Smith	R.F.D. 2, Ellsworth	
Cornish Water Co	P	Clarence A. Small	Cornish	218
Crandon, M. E	P		Columbia Falls	
Cumberland Water District	D	Charles E. Seavey, chairman	Cumberland Center	167
Damariscotta-Newcastle Water Co	P	Paige B. Rand, manager	Damariscotta	562
Danforth Water District	D	George W. Golding, trustee and superintendent	Danforth	130
Dexter Waterworks	M	C. S. Brewster	Dexter	832

Dixfield Light & Water Co	P	Frank M. Bryant, superintendent	Dixfield	389
Dover & Foxcroft Water District	D	Kenneth J. Field, general superintendent	Dover-Foxcroft	902
Eastport Water Co	P	Maurice Emery, superintendent	Eastport	856
East Vassalboro Water System	P	Herman Masse, manager	East Vassalboro	75
Farmington Falls Water Co	P	Lionel Powers, general manager	Farmington Falls	50
Farmington Village Corp	M	Frank T. Adams, superintendent	Farmington	1,304
Fort Fairfield Utilities District	D	Howard McCue, general superintendent	Fort Fairfield	745
Fort Kent Water Co	P	Richard A. Nadeau, general superintendent	Fort Kent	603
Freeport Water Co	P	M. A. Crooker, general superintendent	Freeport	410
Friendship Water Co	P	E. E. Jameson, owner	Friendship	
Fryeburg Water Co	P	Francis Wentworth, general superintendent	Fryeburg	393
Gardiner Water District	D	George Webb, superintendent	Gardiner	3,409
Gray Water District	D	LeRoy Verrill, general superintendent	Gray	313
Greenville Water Co	P	Ernest Harrington, superintendent	Greenville	410
Guilford Water Co	P	Alvin McDonald, superintendent	Guilford	477
Hallowell Water District	D	George Robinson, superintendent	Hallowell	864
Hampden Water District	D	Paul M. Nickerson, general superintendent	Hampden	901
Hancock Water, Light & Power Co	P	Harry W. Johnston	Hancock Point	19
Harrison Water Co	P	E. W. Davis, treasurer	Harrison	110
Hartland Water Co	P	H. E. Randlett	Hartland	366
Hebron Water Co	P	Claude L. Allen, Jr., president	Hebron	
Highland Water Co	P	Lawrence K. Hall, manager	Greenville	
Houlton Water Co	M	Paul W. Coleman	Houlton	1,868
Howland Water Department	M	Gerald E. Kelley, 1st selectman Charles Davis, operator	Howland	350
Island Falls Water Co	P	Paul Jones, general superintendent	Island Falls	262
Jackman Water, Light & Power Co	P	Hector Ferland, general superintendent	Jackman	330
Jay Village Water District	D	James Reed	Jay	100
Kennebec Water District	D	Chairman of trustees	Waterville	9,472
Kennebunk, Kennebunkport & Wells Water District	D	Marion A. Packard, Jr., superintendent	Kennebunk	5,369
Kezar Falls Water Co	P	Allen F. Garner, president	Kezar Falls	336
Kingfield Water Co	P	Earl Wing, manager	Kingfield	240
Kittery Water District	D	Harry N. Wyman, superintendent	Kittery	3,888
Lamoine Beach Water Co	P	Arthur Vidito	Lamoine Beach	
Lewiston Water Department	M	Adelard Gauthier, general superintendent	Lewiston	13,234
Limerick Water Co	P	Henry H. Eastman	Limerick	182
Limestone Water & Sewer Co	P	K. P. Currie, manager	Caribou	418
Lincoln Water District	D	Clifford L. Williams	Lincoln	708
Lisbon Waterworks	M	Arthur Plummer, chairman of board	Lisbon Falls	1,142
Livermore Falls Water District	D	Cecil Mann, general superintendent	Livermore Falls	1,401
Long Pond Water Co	P	A. L. Whipple	Sorrento	105
Lubec Water & Electric District	D	J. W. Bate, manager	Lubec	779
Lucerne Water Co	P	John H. McTague	Lucerne-in-Maine	49
Machias Water Co	P	Hartley Crane, superintendent	Machias	569
Madawaska Water District	D	N. L. Proulx, chairman; Fernand Maquise, superintendent	Madawaska	887
Madison Water District	D	Archie Maslen	Madison	902
Mars Hill & Blaine Water Co	P	K. P. Currie, manager	Mars Hill	613
Mechanic Falls Water Co	P	Arnold Williams	Mechanic Falls	467
Merserve, J. Y	P		Jefferson	
Mexico Water District	D	Harold McInnes, president	Mexico	1,185

APPENDIX 1.—*Maine water utilities*—Continued

[Code: D=district (quasi-municipal); M=municipal; P=privately owned]

Name of company	Code	Official	Address	Number customers
Milbridge Water Co	P	William F. Sawyer, president	Milbridge	191
Millinocket Water Co	P	Henry Michaud	Millinocket	1,679
Milo Water District	D	Arthur B. Carey, Jr., superintendent	Milo	683
Monhegan Water Co	M	Ferdinand L. Day, 1st selectman	Monhegan	199
Monson Spring Water Co	P	Esmond Richardson, general manager	Monson	134
Morrill Water Co	P	A. D. Hatch, president	Morrill	
Moscow Water District	D	Donald Folsom, superintendent	Moscow	105
New Harbor Water Co	P	R. M. Search, president	New Harbor	100
Newport Water Co	P	W. A. Getchell, general superintendent	Newport	551
New Sharon Water Co	P	C. A. Thompson, owner	New Sharon	59
Norridgewock Water District	D	Emmons Casey, general superintendent	Norridgewock	225
North Berwick Water Co	P	Howard LaBreck	North Berwick	338
North Bridgton Water Co	P	Horace Flint	North Bridgton	70
North Haven Water System	M	Vernon L. Beverage, general manager	North Haven	237
North Jay Water District	D	W. George Donald, treasurer	North Jay	102
North Village Water Co	P	Clayton J. Upton, manager	North New Portland	51
North Yarmouth Water District	D	Norman L. Smith, chairman	North Yarmouth	56
Northeast Harbor Water Co	P	Maurice H. Burr, superintendent	Northeast Harbor	468
Northern Water Co	P	Arthur W. Haskell	East Millinocket	551
Northport Spring Water Co	P	Clyde Howard	Northport	210
Norway Water District	D	A. G. Blaquiere	Norway	1,015
Oakland Water Co	P	Carl E. Campbell, general superintendent	Oakland	599
Old Town Water District	D	William P. Jenkins, general superintendent	Old Town	3,128
Paris Village Corp	P	Seward P. Stearns, president	Paris	92
Patten Water District	D	Formann Smith, general superintendent	Patten	107
Penobscot County Water Co	P	E. A. Ray	Ellsworth	2,244
Do	P	J. M. Murray, manager	Orono	
Phillips Water Co	P	Conrad Gould, superintendent	Phillips	265
Pine Tree Aqueduct Co	P	Mrs. Florence J. Haskell	South Paris	18
Pittsfield Waterworks	M	O. Lionel Pomroy, town manager	Pittsfield	933
Porters Landing Water District	D	Myron D. Hilton	Freeport	
Portland Water District	D	Herman Burgi, Jr., general manager	Portland	31,002
Presque Isle Water District	D	Douglas Dingwall, general superintendent	Presque Isle	1,771
Puiia, Nicholas J. Waterworks	P		Rumford	
Quantabacook Water Co	P	D. M. White, treasurer	Harrington	144
Rangeley Water Co	P	A. Mason Russell, general manager; Walter Anderson, superintendent.	Rangeley	320
Richmond Waterworks	P	Richard N. Berry, president; Clinton Hinkley, general superintendent.	Richmond	486

Rumford Water District	D	G. G. Tardiff, general superintendent	Rumford	2,522
Sabbathday Lake Waterworks	P	D.C. Wilson, manager	New Gloucester	
Sanford Water District	D	E. S. Littlefield, Jr.	Sanford	5,162
Sangerville Water Supply Co	P	Donald Burnell, manager	Sangerville	195
Seal Cove Water Co	P	Albert Hodgdon	Seal Cove	58
Seal Harbor Water Co	P	John E. Jordan, Sr., general superintendent	Seal Harbor	264
Searsmont Water Co	P	E. O. Sprowl, owner	Searsmont	
Searsport Water District	D	Nehemiah Roulstone, superintendent	Searsport	444
Skowhegan Water Co	P	Donald Burnell, manager	Skowhegan	1,453
Small Point Water Co	P	W. A. Blair	Small Point	29
South Berwick Water Corp	P	R. Demers	South Berwick	696
South Freeport Water District	D	M. A. Crooker, superintendent	South Freeport	122
South Paris Village Corp. Waterworks	M	Solomon N. Gay, general superintendent	South Paris	840
Southport Water System	M	Stuart Thompson, general superintendent	Southport	457
Southwest Harbor Water Co	P	Donald Sullivan, superintendent	Southwest Harbor	568
St. George Water Co	P	Faune Littlehale, general manager	Port Clyde	115
Stockton Springs Water Co	P	Bert Bowden	Stockton Springs	190
Stonington Water Co	M	Arnold C. Brown, town manager	Stonington	255
Stratton Waterworks	P	A. B. Sargent, owner	Stratton	136
Strong Water District	D	Andrew Pratt	Strong	158
Sullivan Harbor Water Co	P	Sidney E. Doyle, superintendent; T. E. Jewell, treasurer	East Sullivan	39
Union Water Co	P	Philip Morine, manager	Union	77
Van Buren Water District	D	Louis Dumais, general superintendent; Louis Parent, town manager.	Van Buren	951
Vinalhaven Water Co	P	A. A. Peterson, manager	Vinalhaven	351
Waldoboro Water Co	P	Fred Harris, superintendent	Waldoboro	237
Warren Water Supply Co	P	Howard L. Norwood, manager	Warren	208
Washburn Water Co	P	Donald Maskell, general superintendent	Washburn	294
Weeks Mills Water System	P	William Thomas	Weeks Mills	
West Paris Village Corp. Waterworks	M	Walter Appleby, general superintendent	West Paris	111
West Side Aqueduct Co	P	Clayton E. Tucker, treasurer	Cherryfield	
West Skowhegan Aqueduct Co	P	Grover C. Harville	Skowhegan	81
Wilton Water Co	P	Lybrand C. Goldsmith	Wilton	902
Winter Harbor Water Co	P	Albert Hallowell, general superintendent	Winter Harbor	199
Winterport Water Co	P	K. C. Nealley, general superintendent	Winterport	263
Winthrop Water District	D	E. A. Tarr, general manager	Winthrop	742
Wiscasset Water Co	P	Paige B. Rand, manager; Byron Adams, operator	Damariscotta	338
Woodland Water & Electric Co	P	Ralph H. Dorr, general superintendent	Woodland	404
Yarmouth Water District	D	Myron Estabrook, superintendent	Yarmouth	1,213
York Water District	D	James H. Lucas	York	2,372

APPENDIX 2.—*Tabulation of Maine communities having no public water supply systems with population in excess of 750*

Civil division	*1950 population*
Androscoggin County:	
Durham	1,050
Greene	974
Leeds	797
Minot	750
Poland	1,503
Turner	1,712
Aroostook County:	
Bridgewater	1,279
Eagle Lake	1,516
Easton	1,664
Frenchville	1,528
Grand Isle	1,230
Hodgdon	1,162
Linneus	777
Littleton	1,001
Mapleton	1,367
Monticello	1,284
New Sweden	827
Oakfield	1,009
St. Agatha	1,512
St. Francis (P)	1,384
Sherman	1,029
Wallagrass (P)	1,035
Woodland	1,292
Cumberland County:	
Casco	881
Harpswell	1,644
New Gloucester	2,628
Pownal	752
Franklin County	None
Hancock County:	
Blue Hill	1,308
Brooksville	751
Deer Isle	1,234
Gouldsborough	1,168
Mount Desert	1,776
Orland	1,155
Tremont	1,115
Kennebec County:	
Albion	992
China	1,375
Litchfield	953
Monmouth	1,683
Readfield	1,022
Sidney	918
West Gardiner	946
Knox County	None
Lincoln County:	
Bristol	1,476
Whitefield	1,030
Oxford County:	
Hiram	804
Oxford	1,569
Peru	1,080
Porter	1,052
Waterford	828
Woodstock	971
Penobscot County:	
Bradford	793
Carmel	996
Charleston	771
Corinna	1,752
Corinth	1,167
Enfield	1,196
Hermon	1,728
Holden	754
Mattawamkeag	803
Orrington	1,895
Piscataquis County	None
Sagadahoc County: Phippsburg	1,134
Somerset County:	
Canaan	785
Palmyra	965
St. Albans	1,035
Waldo County:	
Lincolnville	881
Unity	1,014
Washington County:	
East Machias	1,101
Jonesport	1,727
Machiasport	781
Pembroke	998
Princeton	865
Steuben	784
York County:	
Buxton	2,009
Hollis	1,214
Lebanon	1,499
Limington	851
Parsonsfield	958
Waterboro	1,071

P=plantation.

APPENDIX 3.—*Maine water utilities*

[A—Chlorination; B—Other chemicals; C—Filtration; D—Coagulation; E—Sedimentation]

Name of utility	Source of supply	Form of treatment	Remarks
1. Addison Point Water District.	Springs	None	
2. Alfred Water Co.	Dug well	A	
3. Allen Water Co.	Springs	None	
4. Andover Water Co.	Stony Brook	A	
5. Anson Water Co.	Hancock Pond	A	
6. Ashland Water District	Machias River	ABCDE	
7. Auburn Water District	Lake Auburn [1]	A	
8. Augusta Water District	Carlton Pond [1]—Gravel packed wells.	AB	Lake Cobbossee (auxiliary).
9. Bangor Water District	Burnt & Floods [1] Ponds	AB	
10. Bar Harbor Water Co.	Eagle Lake	AB	
11. Bath Water District	Nequisset Lake and Thompson Brook.	AB	
12. Belfast Water District	Gravel packed well and Little River.	A	Filter plant at Little River (auxiliary).
13. Belgrade Power Co	Long Lake	A	
14. Berwick Water Department.	Dug well	ABCD	
15. Bethel Water Co.	Chapman Brook	A	
16. Biddeford & Saco Water Co.	Saco River	ABCDE	
17. Bingham Water District	Gravel packed well	None	Jackson Pond [1] (auxiliary).
18. Blethem Spring Water Co.	Springs	do	
19. Boothbay Harbor Water System.	Adams Pond	AB	
20. Brewer Water District	Hatcase Pond	A	
21. Bridgton Water Department.	Highland Lake	A	
22. Brooks Water Co.	Springs and driven wells	None	
23. Brownville Junction Water District.	Springs and dug well	A	
24. Brownville Water District	Gravel packed well	None	
25. Brunswick & Topsham Water District.	Driven wells and gravel packed wells.	AB	
26. Buckfield Water Department.	North Pond	None	
27. Bucksport Water Co.	Alamoosock Lake	ABC	Silver Lake (auxiliary).
28. Calais Water and Power Co.	Dug well at St. Stephens, New Brunswick.	A	St. Croix River (auxiliary).
29. Camden and Rockland Water Co.	Mirror and Hickawaukee Lakes.	AB	
30. Canton Water District	Anasagunticook Lake	A	
31. Caribou Water Works Corp.	Aroostook River	ABCDE	
32. Castine Water Co.	Springs and dug well	A	
33. Clinton Water District	Gravel packed well	AB	
34. Cold Spring Water Co.	Springs	None	
35. Cornish Water Co.	do	do	
36. Cumberland Water District.	Drilled well and springs	A	
37. Damariscotta and Newcastle.	Little Pond [1]	AB	
38. Danforth Water District	Dug and drilled wells	A	
39. Dexter Water Works	Lake Wassookeag	A	
40. Dixfield Light and Water Co.	Hanson Brook	A	
41. Dover and Foxcroft Water District.	Salmon Pond [1]	A	
42. Eastport Water Co.	Little River (from Boyden Lake).	A	
43. East Vassalboro Water System.	Outlet China Lake	A	
44. Farmington Falls Water Co.	Drilled well	None	
45. Farmington Village Corporation.	Varnum Pond	A	
46. Fort Fairfield Utility District.	Gravel packed well	None	Brook (auxiliary).
47. Fort Kent Water Co.	Autobear Brook	A	Fish River (auxiliary).
48. Freeport Water Co.	Brook and well	A	
49. Friendship Water Co.	Wells	None	
50. Fryeburg Water Co.	Brook and springs	A	
51. Gardiner Water District	Gravel packed wells	None	Slow sand filter at Cobbossee Stream (auxiliary).
52. Gray Water District	Spring	A—Standby	
53. Greenville Water Co.	Big Squaw Pond [1]	A	

See footnote at end of table.

APPENDIX 3.—*Maine water utilities*—Continued

[A—Chlorination; B—Other chemicals; C—Filtration; D—Coagulation; E—Sedimentation]

Name of utility	Source of supply	Form of treatment	Remarks
54. Guilford Water Co	Bennett Pond [1]	A	
55. Hallowell Water District	Jamies Pond	AB	
56. Hampden Water District	Gravel packed well	AC	Auxiliary Sourdabecook Stream.
57. Hancock Water, Light and Power Co.	Mine shaft	None	
58. Harrison Water Co	Crystal Pond	A	
59. Hartland Water Co	Stafford Pond	A	
60. Hebron Water Co	Hulls Pond	A	
61. Highland Water Co	Springs	None	
62. Houlton Water Co	"B" stream and gravel packed well.	A	
63. Howland Water Department.	Piscataquis River	A	
64. Island Falls Water Co	Dyer Brook	A	
65. Jackman Water, Light and Power Co.	Moose Pond	A	
66. Kennebec Water District	China Lake	A	
67. K.K. & Wells Water District.	Branch River	ABCDE	
68. Kezar Falls Water Co	Drilled wells	None	
69. Kingfield Water Co	Tuff Pond stream	A	
70. Kittery Water District	Folly and Boulter Ponds [1]	A	Filter plant under construction.
71. Lamoine Beach Water Co	Blunt's Pond	None	
72. Lewiston Water Department.	Lake Auburn [1]	A	
73. Limerick Water Co	Springs and well	A	
74. Limestone Water and Sewer Co.	Spring Brook	A	
75. Lincoln Water District	Round Pond [1]	A	Mattanawcook Pond, (auxiliary).
76. Lisbon Water Works	Wells	None	
77. Livermore Falls Water District.	Moose Hill Pond	A	Well (auxiliary).
78. Long Pond Water Co	Long Pond	None	
79. Lubec Water District	Wells, dug, driven, gravel packed.	A	
80. Lucerne Water Co	Clear Lake	A	
81. Machias Water Co	Machias River	A	
82. Madawaska Water District.	St. Johns River	ABCDE	Filter plant under construction.
83. Madison Water District	Hancock Pond	A	
84. Mars Hill and Blaine Water Co.	Young Lake and Brook	A	
85. Mechanic Falls Water Co	Whitehouse Brook	AC	
86. Mexico Water District	Wells and brook	A	
87. Milbridge Water Co	Springs	None	
88. Millinocket Water Co	West Branch Penobscot River.	ABCDE	
89. Milo Water District	Sebec River	A	
90. Monhegan Water Co	Driven wells	A	Ice pond storage (auxiliary).
91. Monson Spring Water Co	Wells	None	
92. Morrill Water Co	Driven well	do	
93. Moscow Water District	Wyman Lake	A	
94. New Harbor Water Co	Drilled wells	None	
95. Newport Water Co	Lake Nokomis	A	
96. New Sharon Water Co	Drilled well	None	
97. Norridgewock Water District.	Gravel packed well	do	
98. North Berwick Water Co	Perkins Brook	AC	
99. North Bridgton Water Co	Springs and well	None	
100. North Haven Water System.	Fresh Pond	do	
101. North Jay Water District	Gravel packed well and quarry.	A-Standby	
102. North Village Water Co	Springs	None	
103. Northeast Harbor Water Co.	Upper and Lower Hadlock Ponds.	A	
104. Northern Water Co	Gravel packed well	None	East Branch Penobscot (auxiliary).
105. Norway Water District	Pennesseewassee Lake	AB	
106. Oakland Water Co	Messalonskee Lake	A	
107. Old Town Water District	Penobscot River	ABCD	Ground water investigations.
108. Paris Village Corp	Springs and wells	None	
109. Patten Water District	Spring and drilled well	do	
110. Penobscot Water Co	Branch Pond	A	Ellsworth[h].
111. Penobscot Water Co	Chemo Lake	A	Orono.

See footnote at end of table.

APPENDIX 3.—*Maine water utilities*—Continued

[A—Chlorination; B—Other chemicals; C—Filtration; D—Coagulation; E—Sedimentation]

Name of utility	Source of supply	Form of treatment	Remarks
112. Phillips Water Co	Mount Blue Pond	A	
113. Pine Tree Aqueduct Co	Springs and well	None	
114. Pittsfield Water Works	Wells	A	
115. Porters Landing Water District.	Spring	None	
116. Portland Water District	Sebago Lake	A	
117. Presque Isle Water District.	Presque Isle Stream	ABCDE	
118. Pulia, N.J	Spring	None	
119. Quantabacook Water Co	do	do	
120. Rangeley Water Co	Saddle Back Brook [1]	A	Rangeley Lake (auxiliary).
121. Richmond Water Works	Gravel packed well	None	
122. Rumford Water District	Zircon Brook and gravel packed well.	A	
123. Sabbathday Lake Water Works.	Driven well	None	
124. Sanford Water District	Littlefield Pond,[1] driven wells.	AB	
125. Sangerville Water Supply Co.	Bennett Pond	A	
126. Seal Cove Water Co	Seal Cove Pond	A	
127. Seal Harbor Water Co	Jordon Pond	A	
128. Searsmont Water Co	Spring	None	
129. Searsport Water District	Half Moon Pond	do	
130. Skowhegan Water Co	Pond and brook	ACD	
131. Small Point Water Co	Spinney Pond	A	
132. South Berwick Water Corp.	Gravel packed well	None	
133. South Freeport Water District.	Spring	do	
134. South Paris Village Corp. Waterworks.	Gravel packed wells	do	
135. Southport Water System	Sawyer Pond	A	
136. Southwest Harbor Water Co.	Long Pond	A	
137. St. George Water Co	Drilled wells	None	
138. Stockton Springs Water Co.	Half Moon Pond	do	
139. Stonington Water Co	Burnt Land Pond	A	High color and acidity
140. Stratton Water Works	Brook and springs	A	
141. Strong Water District	Day Mountain Pond	A	
142. Sullivan Harbor Water Co.	Long Pond	None	
143. Union Water Co	Spring and wells	do	
144. Van Buren Water District	Brook	A	
145. Vinalhaven Water Co	Round Pond	A	
146. Waldoboro Water Co	Drilled wells, quarry and brook.	A	
147. Warren Water Supply Co	Wells	None	
148. Washburn Water Co	Driven well	do	
149. Weeks Mills Water System.	Springs	A	
150. West Paris Water Department.	Gravel packed well	A	Zeolite iron removal.
151. West Side Aqueduct Co	Spring	None	
152. Wilton Water Co	Varnum Pond	A	
153. Winter Harbor Water Co	Birch Harbor Pond	A	
154. Winterport Water Co	Lowes Brook	A	
155. Winthrop Water District	Narrows Pond	A	
156. Wiscasset Water Co	Wards Brook	AC	
157. Woodland Water and Electric Co.	St. Croix River	ABCDE	
158. Yarmouth Water District	Gravel packed wells	None	
159. York Water District	Chases Pond [1]	AB	
160. West Skowhegan Aqueduct Co.	Spring	None	
161. Jay Water Department	Moose Hill Pond	A	To purchase from Livermore Falls Water District.

[1] Indicates that supply is partly or fully closed to fishing.

NOVEMBER 1, 1959.

STATEMENT OF PAUL W. BEAN, AGENT AND ENGINEER FOR UNION WATER POWER CO., LEWISTON, MAINE

Mr. BEAN. My name is Paul W. Bean. I am employed by the Union Water Power Co. of Lewiston, Maine.

As to my work I am engaged with the determination of regulation and flow on the Androscoggin River.

I believe the answer to your question is the initial installation contemplated in the High Errol project indicates no hydroelectric power at the time it may be built, if it is presently feasible to be built.

Senator MUSKIE. Is there any hydro potential there?

Mr. BEAN. There is potential, yes. It would be, I believe, some years in the future before it will be installed. Initial plans indicate the provisions will be made for future hydroelectric installation.

Senator MUSKIE. What is the size of the potential?

Mr. BEAN. I cannot say without referring to the NENYIAC report.

The CHAIRMAN. Is the project to which you refer a private project or public project?

Mr. BEAN. As far as I know, sir, the present plans are involving private developments.

Senator MUSKIE. Thank you Mr. Bean.

It is a fair statement, is it not, that probably outside of these sites that we have already discussed that future electrical energy in this State must come from either conventional or atomic thermo plants.

Mr. NEWDICK. I think that is the plans of the utilities in the area that I heard. There are possibly some small ones or redevelopment of existing ones from which they can get a few more kilowatts. But that is about it. It would come from steam in the developments that we have. We have had no atomic development or atomic plant at the University of Maine.

There was hope to get in some of the program of education at the University of Maine a small reactor.

There was a plant that the power company had on Wayman Lake last year. They went into the legislature and received the authority to take the water out of the lake and pump it back up to another one with reversible turbines and generate a few more kilowatts. It looks like steam or thermo or some type in the State of Maine.

The CHAIRMAN. What is the principal fuel used in the steamplant?

Mr. NEWDICK. Oil.

Senator MUSKIE. Could we get in the record at this point also a statement indicating the extent of hydro development in this State and also the thermo capacity in this State?

Mr. NEWDICK. Yes, we could. We will submit it. [Hydro development in Maine, as of Nov. 30, 1959, was 351,533 kw-hr, and thermo capacity-was 382,705 kw-hr.]

Senator HART. This is the question raised in my mind, and I am not in a position to give the answer. I made the assumption that your commission does not regulate power and public power utilities in this State, or does it?

Mr. NEWDICK. We regulate the private ones on rates, tariffs and securities and matters of service. We only have three cooperatives

here in the State of Maine and the only thing we regulate or get involved in is when they will not go out and make an extension; then they, under the statute, can petition for permission for a hearing and the co-op will explain the reasons for not going out and making the extension, and the commission will order them to make an extension in the area. But that is the only way we get involved with them.

Senator HART. The municipal utility is not subject to any jurisdiction of yours.

Mr. NEWDICK. No. We regulate all municipal companies.

The CHAIRMAN. I do not believe they have any municipally owned power distribution system, do you?

Mr. NEWDICK. Yes, we do.

The CHAIRMAN. That is what the Senator referred to.

Mr. NEWDICK. As to distribution systems we have possibly three or four of them.

The CHAIRMAN. They own their generating facilities.

Mr. NEWDICK. No, sir. They buy from the companies.

Mr. COBB. I will present next, Mr. Chairman, the Honorable Ronald W. Green, commissioner of the Sea and Shore Fisheries.

STATEMENT OF RONALD W. GREEN, COMMISSIONER, SEA AND SHORE FISHERIES, STATE OF MAINE

Mr. GREEN. Senator Kerr, Senator Moss, Senator Hart, Senator Muskie, and Congressman Oliver, the primary responsibility of the Maine Department of Sea and Shore Fisheries is to the State's commercial fishing industry. We are, therefore, concerned with problems relating to the utilization of salt water rather than fresh. We believe that because of the importance of our $75 million commercial fishing industry and of our coastal bays and estuaries, our inlets and harbors, and of the sea itself, that any study of the State's water resources should be broad enough to include some consideration of our vast tidewater areas.

In brief, we have three problems connected with our coastal waters which might be of interest to this committee.

(1) Excessive fresh water runoff following heavy storms has an adverse effect on live lobsters held in pounds located in areas where a sharp reduction in salinity may result, and it may also adversely affect shellfish such as the soft-shell clam when such runoff flows over clam beds or flats.

(2) The redistribution of sediments on flats areas resulting from heavy storms and excessive runoff of rainwater likewise is also damaging to clam flats areas since deposits of silt and clay eroded from coastal and inland areas are left to blanket previously productive tidal flats.

(3) Pollution of shellfish growing areas by sewage and industrial waste is a problem which may be expected to become more serious as the population increases and the State becomes more highly industrialized. At present 45,972 acres of flats are closed to diggers because of pollution. This represents a 13 percent increase in closures in the past 10 years. Other thousands of acres are classified as borderline, requiring only a small amount of additional pollution before they, too, will have to be closed.

The CHAIRMAN. Is it possible that this rate of pollution might get to the point where it would destroy your commercial fishing industry?

Mr. GREEN. It could very well come to just that.

The CHAIRMAN. You do contemplate that that would be a problem which your States would readily need to solve, do you not?

Mr. GREEN. To some degree, yes. I qualify that in a later sentence, Senator, and it may be an answer to your question.

The CHAIRMAN. All right.

Mr. GREEN. In our opinion, no elaborate flood control program would be required to correct conditions described in (1) and (2). Improved forestry and agricultural practices in the affected areas should help prevent excessive runoff and erosion. The pollution problem, however, mentioned in item (3) is more complex, and we believe any solution will depend on a cooperative effort at Federal, State and local levels.

The CHAIRMAN. Is any of that pollution in connection with interstate streams?

Mr. GREEN. I did not get your question.

The CHAIRMAN. Is any of that pollution resulting from interstate streamflow?

Mr. GREEN. We have just one—two to some degree, one in particular in the Kittery and Portsmouth area.

The CHAIRMAN. I think you are talking about one of the most important things that this committee has received information on, and we are tremendously interested in being advised wherever practicable of the efforts being made by the States in connection with their own sovereignty in meeting the pollution problem and also your recommendations as to how the Federal Goverment can assist in expediting the abatement of pollution.

Mr. GREEN. Senator, it will be an educational program, more or less. The mechanics have already been established as far as the Federal. Federal money has been available to some degree.

The CHAIRMAN. That has to be with local and municipal sewage disposal plants.

Mr. GREEN. Yes, sir.

The CHAIRMAN. Now, the pollution you are talking about, is it primarily from community sewage disposal?

Mr. GREEN. Domestic sewage mostly, affecting the clams; yes.

The CHAIRMAN. You do not have any problem with industrial pollution?

Mr. GREEN. Industrial would be secondary as far as clams are concerned.

The CHAIRMAN. But not limiting it to clams.

Mr. GREEN. Limited to the fisheries itself, I would say that. The domestic sewage was a great deal more our present problem than industrial sewage.

The CHAIRMAN. Then you are very fortunate, very fortunate.

Mr. GREEN. I am talking now of the commercial fishery. I hope I made myself clear that it was strictly the commercial fishery.

The CHAIRMAN. As a matter of information to the committee, does the same situation apply to fish and wildlife generally?

Mr. GREEN. No; I think it would be in reverse if you would encompass both inland and coastal.

The CHAIRMAN. Does not all of this water find its way into the coastal discharges of your streams to the ocean?

Mr. GREEN. Yes. Eventually; yes, sir.

The CHAIRMAN. I mean that is a daily process, isn't it, that all of the water of your streams discharges into the ocean?

Mr. GREEN. Yes, sir.

The CHAIRMAN. And the commercial fisheries are not limited to the areas where the discharge is coming only from domestic sewage outlets, is it?

Mr. GREEN. Not exactly. I am talking about the areas that are closed—the clam areas that are closed because of pollution, because of the fact——

The CHAIRMAN. I asked you to discuss it from the whole field of commercial fishing.

Mr. GREEN. I do not believe I am qualified to answer that question to break it down as to what contributes the most as far as the subject——

The CHAIRMAN. You are the commissioner of sea and shore fisheries?

Mr. GREEN. Yes, sir.

The CHAIRMAN. If there is a better authority here to advise us on this question——

Mr. GREEN. I do not think that that information would be available unless the question is a little clearer, Senator.

The CHAIRMAN. Is there?

Senator MUSKIE. Is there a pollution threat with respect to commercial fisheries other than clam, that is, coastal fisheries?

Mr. GREEN. Yes. But it is overshadowed, as far as domestic sewage is concerned, by the commercial fisheries.

Senator MUSKIE. But it has an impact on the fisheries other than clams, that is the pollution threat?

Mr. GREEN. The pollution threat in general—yes; it would when you take into consideration some of the migratory species. It has had ill effects upon migratory fish.

Senator MUSKIE. Have those effects ever been studied?

Mr. GREEN. And those effects as far as—I think the Commissioner of Inland Fish and Game will probably be more qualified to answer that particular question.

Senator MUSKIE. On the coastal fisheries?

Mr. GREEN. The migratory fish that migrate into the fresh waters.

Senator MUSKIE. Upstream?

Mr. GREEN. Upstream; yes, sir.

Senator MUSKIE. In terms of coastal fisheries, lobsters, smelt, ground fish, is there a pollution threat in those areas?

Mr. GREEN. Most of those species are taken beyond the areas where industrial pollution would have any great ill effect upon those particular species.

Senator MUSKIE. How about the lobsters?

Mr. GREEN. The lobsters are taken in areas similar. The industrial pollution—we have not been able to break it down as to the effect that it may have—industrial pollution may have an effect in areas where

those species are taken. In areas in heavily populated areas where pollution seems to be in greater quantity——

Senator MUSKIE. So that insofar as your salt water fisheries are concerned, the greatest threat is directed toward your clam flats.

Mr. GREEN. As far as commercial fisheries, yes, sir, and that was in answer to your question, Senator Kerr.

The CHAIRMAN. What is your annual salmon take here?

Mr. GREEN. Annual salmon—we have very, very little commercial fisheries as far as salmon is concerned.

The CHAIRMAN. Have you ever had commercial fishing for salmon?

Mr. GREEN. Yes, sir. A number of years ago that was a very important industry here in the States.

The CHAIRMAN. What happened to it?

Mr. GREEN. Industrial pollution is what they have told me.

The CHAIRMAN. I thought you said that industrial pollution was not a factor, in your—you mean it has already destroyed it?

Mr. GREEN. It has already destroyed it. I am talking about what we have right at the present time and the methods of trying to control it.

The CHAIRMAN. In other words, anything in the way of commercial fisheries that can be destroyed by commercial pollution has already been destroyed.

Mr. GREEN. That is a fine answer to your question. I am sorry I did not pick that up at the start.

The CHAIRMAN. Now, your other commercial fishery business is being gradually eliminated by domestic pollution.

Mr. GREEN. By domestic sewage at the present time.

The CHAIRMAN. Do you regard that as a pretty high price to pay for use of private industry and people to use your waterways?

Mr. GREEN. Yes, I would have to answer that affirmatively. It is tremendous.

The CHAIRMAN. You mean too high a price?

Mr. GREEN. I would have to qualify that by backtracking to the commercial fishery that existed here at one time in the State. Pertaining to the salmon and the smelt fishery which exists in, well, in a limited stage at the present time and in fact of very little commercial value, because of the fact that we have two departments in this State regulating fisheries.

The department of inland fish and game and the department of sea and shell fisheries.

I was trying to hold my comments to the commercial fisheries as they now exist. And the water improvement commission which will follow will have a great deal more to say relative to pollution.

The CHAIRMAN. Thanks very much.

Senator MUSKIE. Did you have something further in your statement that you wanted to cover?

The CHAIRMAN. Yes. He is at the second paragraph, on the second page.

Mr. GREEN. While the primary concern of the department of sea and shore fisheries is with the commercial fishing industry, we are nevertheless deeply interested in all elements affecting the economic health and well-being of our coastal communities.

For this reason we work closely with the Maine Port Authority and other State agencies, our congressional delegation, and officials and groups at the local level on various harbor improvement projects. We feel that these projects are vitally important to our coastal communities, since they are designed to provide better navigational facilities and deeper, safer harbors both for our fisherman and for the increasing thousands of recreational boating enthusiasts. Representatives of other State agencies appearing before this committee today will doubtless supply additional information on this subject.

While we are on the subject of the tidal water utilization I make mention that until such time as the present tidal project Quoddy is utilized, 300,000 million kilowatts are running wild each hour.

In conclusion, we would like to point out that we believe three-way cooperation—at the Federal, State, and local levels—is essential to the success of any program to improve the management of the water resources of the State of Maine.

Senator MUSKIE. Thank you, Ronald, for your statement.

Mr. COBB. Senator Muskie and Senator Kerr, I believe you will find, if you go through the rest of these you will have some of the answers to the questions that you are asking some of these people.

The next man I would like to introduce is Edward Langlois, director of the Maine Port Authority.

The CHAIRMAN. All right, Mr. Langlois.

STATEMENT OF EDWARD LANGLOIS, GENERAL MANAGER, MAINE PORT AUTHORITY

Mr. LANGLOIS. Mr. Chairman and gentlemen of the committee, my statement is going to be very, very brief.

I submitted it to Senator Hart on October 13.

The primary purpose of the Maine Port Authority is to foster the development of maritime activities in Maine to the advancement of commerce and to assist in the promotion of the welfare of our coastal communities.

The Maine Port Authority feels it must continue to spend efforts to provide for safe navigable waterways in Maine in particular as its principal port engaged in foreign commerce.

The Maine Port Authority throughout State's congressional delegation in Washington and with the support of local groups and agencies have asked and received Federal cooperation and support to assure that Maine ports are safe and navigable for all deep-draft vessels engaged in foreign commerce. Further, the Maine Port Authority in cooperation with the department of sea and shore fisheries, other State agencies, local groups, and our Washington delegation feel it is of utmost importance to assure that our many coastal communities depending on fishing and recreational boating be provided with deep, safe harbors and inlets.

The preservation of our fishing industry and the attraction of recreational boating to the coast of Maine is important to the overall economy of this State.

I would like to add for the record that we in Portland at the Maine Port Authority are very, very grateful for the splendid cooperation

and understanding that we received from the New England division of the U.S. Army Corps of Engineers.

The CHAIRMAN. Is it your experience that unpolluted water or polluted water is more persuasive both in bringing about an increase in recreational activities and fishing activities or—I say is it beneficial or detrimental?

Mr. LANGLOIS. May I have that question just once more?

The CHAIRMAN. You told us that your primary effort was to help increase foreign commerce and to develop the fishing industry and recreational industry. I ask you with reference to those latter two objectives, is increased pollution helpful or harmful?

Mr. LANGLOIS. Well, pollution I suppose along our coast, and I am speaking now along our coast, might in some way distract from a man operating a $40,000 or $50,000 yacht coming into the harbor but we have such tremendous tidal currents along our coast that I do not believe that any pollution would affect recreational boating at all, and as far as the fisheries are concerned, we work with sea and shore fisheries to assist local communities in getting their harbors deepened and protected through Federal support.

The CHAIRMAN. Protected from what?

Mr. LANGLOIS. From the elements of nature which we have definitely along our tremendous coastline. We also want to, when you deepen a harbor or an inlet, to have deep enough water so that when we have our 11- and 12-foot tides that a fishing boat or pleasure craft when it goes into the harbor will not be grounded up at low tide.

The CHAIRMAN. I can understand that readily. It just occurred to me that recreational activities which is one of the most rapidly growing industries in our country would be greatly augmented and encouraged in areas of unpolluted waters rather than in areas of increased pollution.

You do not think that is the situation here.

Mr. LANGLOIS. Not along our coast. In Portland Harbor itself where we are a major seacoast port where you have fishing and large oceangoing vessels coming in with oil.

The CHAIRMAN. That is not recreation.

Mr. LANGLOIS. No.

The CHAIRMAN. I was talking about recreation.

Mr. LANGLOIS. In recreation boating I cannot see where pollution would have any effect in our harbor, such as Bar Harbor dock, up the coast to Eastport.

The CHAIRMAN. Then you must develop an amazing immunity to it.

Senator MUSKIE. Thank you, Ed.

Mr. LANGLOIS. Thank you, gentlemen.

Mr. COBB. Mr. Chairman, next I would like to introduce Austin H. Wilkins, forest commissioner.

STATEMENT OF AUSTIN H. WILKINS, FOREST COMMISSIONER, STATE OF MAINE

Mr. WILKINS. Senator Kerr, Senator Moss, Senator Hart, Senator Muskie, and Congressman Oliver.

After 300 years or more of growth and development, Maine is still a heavily timbered State. The original forest area is estimated

at 29 million acres and today there are still approximately 17 million acres, which are 84 percent of the total land area of the State. This great natural and renewable resource is the No. 1 economy of the State—a leadership held since statehood in 1820. Products dependent upon this forest resource, such as lumber, pulp and paper, and wood-turning industries, account for almost 40 percent of the total value of manufactured products in the State. Timber harvesting has a product value of over $500 million annually.

The U.S. Forest Service, in joint cooperation with the State forestry department and private industry, expects to make available a published report by June 30, 1960, to be known as the "Maine Forest Inventory."

This comprehensive report will contain data on volume of wood, by species, by county; forest types; growth and drain; economic values; and future trends of the overall forestry picture. It will be a useful tool in the multiple and use management picture of timber harvesting, wildlife management, recreation, and water resource values.

The cycle of forest acreage in Maine is now on the upswing. The current figure is about 17 million acres, and the projected estimate for 1980 will be considerably increased. The land ownership pattern of the current 17 million acres is of interest from a management point of view. The national "Timber Resource Review" report shows 77,479 individual forest landowners—76,822 owners of 500 acres or less for an aggregate of 5,200,000 acres, and the remaining 657 owners the balance of 11,700,000 acres, most of which are in large ownerships.

Aside from the direct economic value of growing forests and forest production, there is the even more valuable protection that forest cover furnishes to the many watersheds of the State in water retention, streamflow, erosion prevention, rainfall, and so forth. These 17 million acres of forest serve on a great natural water storage to maintain a balance between precipitation and surface flowage by the prevention of immediate runoff. Post-cutting practices have always resulted in maintaining some kind of a forest cover and prevented any serious erosion, flood, or runoff problems.

A look at the map of the State shows almost a complete network of connecting waterways of lakes, streams, rivers, and ponds. In earlier years, timber transportation was carried out almost entirely by river driving. Water is being used less today for this purpose because of modern design of mechanized equipment and road construction to reach the more inaccessible acres.

However, several main waterways are still being used to a limited degree for pulpwood and long-log drives.

We have no readily available data on the actual amount of water utilized by Maine forests for maintenance of life and growth. It is known, however, that approximately 30 percent of the total precipitation in forested areas is intercepted and at least partially utilized by forest foliage.

Studies also show that the annual water loss values are about 18 inches in the northern half of the State and 20 inches in the southern half. These losses are in terms of runoff and precipitation. Hydrologic laboratories are finding the answers to many questions on the relationship between forests and water.

Maine, with its 17 million acres of forests, will continue to be a great natural water storage to supply water for domestic and industrial use. To make these lands furnish even more economic and social benefits remains to be seen. It is believed that better forest management can increase water yields but how much is not definitely known.

There is a definite trend within the industry in Maine for large and small ownerships to carry out more selective cutting practices.

And I add the following sentence to say the role of the State forest department in this water resource problem and study is to administer sound workable programs of forest fire, disease, and insect control and small woodland management practices.

Thank you.

Senator MUSKIE. At the bottom of page 2, often, of your statement, you refer to annual water loss values due to runoff and precipitation. Could any of these losses be eliminated by better cutting practices?

Mr. WILKINS. In the case of precipitation, Senator, we refer to the loss through transpiration and evaporation. In other words, if the foliage intercepts 30 percent we will say 18 inches is loss each year by this constant cycle of transpiration and evaporation back into the atmosphere and does not get back into the ground.

Senator MUSKIE. This loss is inevitable.

Mr. WILKINS. That is right.

Senator MUSKIE. How about the runoff?

Mr. WILKINS. The runoff will depend on the types of forest growth. It will vary considerably. But the forest floor serves as a huge sponge. That is how they get this tremendous growth. The forests here are apt to trap in the ground more water than our hardwood forests.

Senator MUSKIE. That will not be diminished by better cutting practices?

Mr. WILKINS. I think it can. There are studies being carried on at the famous hydrologic laboratories in North Carolina. They are carrying on studies along this line. Their reports are not available but I think they make a valuable contribution to this problem.

Senator MUSKIE. Could you give us information on the extent to which our forests are harvested and the extent to which annual growth matches the annual harvest?

Mr. WILKINS. The annual harvests in the principal products—we are harvesting annually about 2¼ million cords for pulpwood industry. We are harvesting between 500 and 600 million board feet of lumber and about 150,000 cords for the wood nurseries. You have other products like Christmas tree business, and so on. We have an annual payroll in the forest industry alone of about $127 million. With the population of 900,000 people, 34 percent of the working population in Maine is devoted to woodwork of one kind of another, whether he is a wood chopper or whether he is a man in the wood-turning mill.

Senator MUSKIE. Have you developed any information on the total harvesting of our forests and losses due to forest fires and disease relative to the annual growth?

Mr. WILKINS. No one today has a really firm answer on what the actual losses resulting from fire are. In fact Congress is setting up

some studies now in the U.S. Forest Service, to try to determine what some of the intangible losses are.

For example, what is the loss in relation to recreation? Waterpower? And water development and game management? We do not have the answer to that today and we are studying it.

So far as growth is concerned, Senator, I think it is a safe statement to say that the annual growth is about 2 and 3 percent of the volume and that our cut is not quite equal to the growth. It depends on which way you are talking. If you talk on hardwood growth, the growth is in excess of annual cut.

Senator MUSKIE. Do you have any figures on how long it takes the forest to renew itself?

Mr. WILKINS. Here again are many variables. We say 60 to 80 years if you start right from scratch by planting a seed in the soil. Under the soil bank program we are doing a lot of that here in Maine. Roughly 14,000 acres have been signed out under the soil bank program.

The CHAIRMAN. How many?

Mr. WILKINS. 14,000 acres. Only under the soil bank program for forestry reforestation.

Senator MUSKIE. What would be the figure on replenishment of the forests where selected cutting has been done, say pulpwood cutting.

Mr. WILKINS. Here by wise and sound management practice of selective cutting you always have residual stand. You can come back periodically and harvest, in contrast to the early practices of stripping, wiping everything out. To us that is one of the most encouraging things going on. Small and big ownerships are getting into selective cutting.

Senator MUSKIE. How often can you harvest a stand of that kind?

Mr. WILKINS. I think you can get into what we call 10, 20, and 30 cutting cycles. You cut an area and come back in the next 10 years and make another cut. In clear cutting you do not have that opportunity.

Senator MUSKIE. To what extent is selected cutting practices being done in the State?

Mr. WILKINS. I think, Senator, it is one of the most encouraging things in the State. In the small landownerships it is growing by leaps and bounds under our so-called Federal cooperative small woodland management program. It is gaining momentum in big industry. I can cite several big companies going on big-scale selective cut, being a cutting and diameter-limited practice.

Senator MUSKIE. Is there any stripping of forest land that used to be done?

Mr. WILKINS. I think it is safe to say that in early days they did that, Senator, but not today. I might say this: In those days that kind of practice was to meet the economic needs of the time. It was recognized as a practice. Today with the greater demand of wood and substitutes and competition plastics and so forth, we are getting more into selective cutting. I think that is the answer.

Senator MUSKIE. Is the practice in this respect as good along our borders as it is in the interior?

Mr. WILKINS. You mean within the State?

Senator MUSKIE. Yes.

Mr. WILKINS. I think the practice is good.

Senator MUSKIE. Along the borders as well.

Mr. WILKINS. Yes, I think so. My observation, as I have traveled about the State, I would say pretty much that is true for Maine. Other States, let's take the Province of Quebec, it is entirely a different situation there. In fact, we import along the Canadian Lake to harvest our timber products here in Maine.

Senator MUSKIE. What would be your view, and I ask this question because I know you have a view on this question, with respect to proposed national parks.

Mr. WILKINS. I have a view, Senator. Any sizable tract of land such as proposed here of 760,000 acres, and you take that immediately out of production you are effecting the whole economy of Aroostook County. There are two concepts here. If I am correct the national park system cannot and does not permit game management.

The CHAIRMAN. Not permit what?

Mr. WILKINS. Game management and timber harvesting.

The CHAIRMAN. Game?

Mr. WILKINS. Game, and timber harvesting. In other words, I am a strong advocate of the multiple land use management and these 17 million acres in Maine of which 760,000 is a part we can practice this multiple land use practice. I traveled with this team studying this and I think they are sincere in what they have in mind. I think there are these factors. It is not recreation alone, Governor, it is the other.

I think you can practice all of this today, Governor. We have a tremendously big State park. People can fish and hunt. You can practice recreation. We can practice game management and we can timber-harvest just as we are today.

Senator MUSKIE. What do you think would be the effect on the forest growth on this proposed area if there was not regular harvesting?

Mr. WILKINS. Expressed in terms of cord, I do not know how much would be taken out of production, Senator, but I do know there are about 36 individual ownerships involved in this proposed tract. In fact we have today for the first time a fairly good outline of the proposal they intend to make.

Senator MUSKIE. I had in mind more the health of the forest.

Mr. WILKINS. By leaving it stagnant—I think that is wrong. I am an advocate of good sound forest practice. To me leave something idle and tied up like that without practices is not good. I cite the Adirondack Preserve as a classic example of what not to do.

Senator MUSKIE. Do you have any view with respect to the high dam proposed, the high dam at Rankin Rapids?

Mr. WILKINS. In this respect, Senator, I think it is a matter of how much Rankin Rapids would flow back the Allagash River and vitally destroy the so-called wilderness area of the canoe trip section which I believe is the proposal of the national park people.

Senator MUSKIE. Would it have a serious impact in terms of harvesting timber?

Mr. WILKINS. I think it would slow considerable acreage but here again research study would have to be determined and I do not have the answer to that.

Senator HART. Is there Canadian timber coming in for Maine paper production?

Mr. WILKINS. To a limited degree. To express that in terms of cords or terms of wood pulp, I do not know, Senator Hart. I know we export more wood than I think is brought in. Roughly, through customs 90 million board feet in the form of logs or lumber goes out of the State.

The CHAIRMAN. Canada?

Mr. WILKINS. Yes, and our neighboring State.

Senator MUSKIE. Could you give us one more answer, Austin? Could you give us a picture of the disease problem in our Maine forests?

Mr. WILKINS. Well, the disease problem is not as heavy as the pest problem. We have the white pine blister which I believe has been with us since 1917. We leveled off and reached what we call a maintenance status in control of that in Maine. The pest control is a big one. There is the spruce bloodworm and the moth.

Senator MUSKIE. Can these be curtailed under management limits?

Mr. WILKINS. Yes. I want to be cautious about this. By spraying we can, we think, curtail and stop serious epidemics which will cause defoliation which will make industry come in and make a tremendous salvage operation, and we think spraying on the basis we are doing now we can save these forests for industry.

Senator MUSKIE. I think the committee would be interested in a brief description of the Maine forest district area of the State it covers and what function of these districts are and your impression of its value.

Mr. WILKINS. The Maine forest district is made up of approximately 10 million acres of wild land townships.

The CHAIRMAN. Of what?

Mr. WILIKINS. Of wild land townships. In other words, there is no form of government, Senator. They are distinctly wild land townships, known as township 16, range 20; township 4, range 6; and so on. I think one of the most unique pieces of legislation was enacted in 1909 here in Maine whereby as a forest fire prevention measure, resident and nonresident landowners got together and said, "We must protect our land against fire." So there was incorporated by legislation the so-called Maine forest district. These landowners pay a self-imposed tax which at the present time is 4¾ mills.

Senator MUSKIE. It was imposed with the help of legislation.

Mr. WILKINS. Yes, by legislative act. I think it was initiated entirely by themselves.

So my responsibility is to administer fire protection and through this tax I realize about a half million dollars which is matched to a degree by the Clapman Dairy Act Federal Cooperative IN–2.

The CHAIRMAN. Four and what?

Mr. WILKINS. Four and three quarter mills. On approximately $100 million valuation in the district.

The CHAIRMAN. On how many acres?

Mr. WILKINS. 10,200,000 acres.

Senator MUSKIE. $10 an acre.

Mr. WILKINS. By this law any organized towns adjacent to this district may, at town meetings, vote itself in. We have a few munici-

palities and few organized plantations for school purposes who are part of this $100 million valuation. That is set up by the board of equalization by the taxation of Maine. In the organized towns the picture is different. We have little small broken-down woodlots of about 5 million acres, but the district, Senator, as you know this pattern has changed over the years as far as the tax is concerned, but never once have the landowners ever defaulted their obligation to meet any fire bills.

In 1952 there was $600,000 of fire-suppression bills which was in excess of what they could appropriate under the tax. They met it by borrowing from the unappropriated surplus and returned it the following year by raising the increased tax up to 9 mills.

Senator MUSKIE. The tax you mentioned is the only tax burden borne by these lands; is that right?

Mr. WILKINS. That is right. The others are by legislative appropriation from the general fund.

Senator MUSKIE. No other questions. Thank you, Austin.

STATEMENT OF RAEBURN MacDONALD, WATER IMPROVEMENT COMMISSION, STATE OF MAINE

Mr. MACDONALD. Mr. Chairman, Senator Kerr, and members of the Senate select committee.

I am Raeburn MacDonald and I am an employee of the water improvement commission which is the water pollution control agency of the State of Maine.

The law under which we operate is based upon the classification theory. In other words, the classification is the basic theory and this is for the purpose of reclaiming—we have the licensing provision in the law which permits us to stem pollution and to keep it from getting worse and keep the unclassified waterways within reasonable limits.

In other words, within the limits that the commission hopes some day may be their official classification.

The CHAIRMAN. Does your power go to the extent of not only holding pollution to no greater extent than now exists but also reducing it?

Mr. MACDONALD. The power of the commission does not actually do that. The power of the commission extends to the licensing and then to——

The CHAIRMAN. To licensing of what?

Mr. MACDONALD. Licensing of new sources of pollution.

The CHAIRMAN. I see. Do they get a license to pollute? Is that it?

Mr. MACDONALD. That is right.

In other words, an industry moving on to a new site or municipality constructing a new sewer has to come to the water improvement commission for a license to enter a public waterway, and the commission then is obligated to issue the license, if in the case of classified waters, the classification will not be interfered with and in the case of unclassified waters, it does not drop the quality below the anticipated classification or, let us say, the hoped-for classification.

The CHAIRMAN. But you have no authority to abate existing pollution?

Mr. MACDONALD. The existing pollution is abated through the classification measure and the classification is a function of the State legislature. We recommend to each legislature certain classifications for streams, lakes, and coastal waters. Then the legislature takes the matter up with their pending hearings and passes that classification that we recommend, if they see fit, or alter that classification as they see fit.

Senator MUSKIE. To what extent have the waters of the State been classified?

Mr. MACDONALD. Mileagewise, Senator Muskie, about 92 or 93 percent. Volumewise, it is entirely different and that is difficult to say because the unclassified portions are generally the lower extremities of major rivers. While they have a large proportion of the total discharge they are small in mileage.

Senator MUSKIE. The major rivers then have not yet been classified?

Mr. MACDONALD. No. Some of the major rivers have largely been classified. Those that we still lack are the Androscoggin and Kennebec, basically, and of course, the St. John, being the international stream, does not come under our jurisdiction and the same is true of the St. Croix.

Senator MUSKIE. To what extent are the waters to which you have jurisdiction, been upgraded by acts of the legislature in the Classification Act?

The CHAIRMAN. You mean to what extent the pollution that did exist has been abated or stopped?

Senator MUSKIE. To what extent has the legislature required higher classifications.

The CHAIRMAN. What I do not understand is, does that mean to what extent have they permitted more or to what extent have they reduced?

Senator MUSKIE. To what extent have they reduced?

Mr. MACDONALD. There again we are running into that matter of mileage and volume. The volume would be a fairly good percentage. I do not know what. The mileage is a small percentage, probably certainly under 10 percent, problably 5 or 6 percent.

Senator MUSKIE. Has this upgrading taken place on streams where sewage or industrial pollution is the greater problem?

Mr. MACDONALD. It has taken place in both instances. I would say the majority of the upgrading has occurred where municipal sewage was the greater problem.

Senator MUSKIE. Proceed with your statement.

Mr. MACDONALD. I think that the greater proportion of the upgrading, in other words, the miles of streams involved and the miles of shoreline involved, has taken place where municipal pollution or sanitary pollution was the greater problem.

The CHAIRMAN. Has the problem of industrial pollution been studied or has it more or less been ignored?

Mr. MACDONALD. It has been studied.

We take a stream test. Rather than differentiate between sanitary pollution and industrial pollution, we take a stream and make a study of both the industrial and the sanitary pollution.

The CHAIRMAN. To what extent have you made recommendations and they been acted on by the legislature in the matter of eliminating industrial pollution? Would you say great progress has been made or the progress has yet to be made?

Mr. MACDONALD. We are in my opinion at the threshhold of really making progress. I think that the progress in the next 10 years will be many times the progress in the last 10 years. We are getting to the point now where industries are looking around for byproducts, as they should, and they are also looking around for different housekeeping methods and there is throughout the State a lot of improvement in housekeeping methods and a lot of changes in processes to make possible a byproduct that will take up some of the waste load on the public waters.

The CHAIRMAN. To what extent has the public sentiment or opinion been mobilized or to what extent has it crystallized with reference to expressions or desire that something be done in this regard?

Mr. MACDONALD. There again, Senator, things have changed a lot within the last 5 years, and probably more within the last 3. I think that the public—that is to some of our organizations within the State, such as the League of Women Voters, the fish and game groups, and other civic organizations—have brought the problem before the people and they have not presented nearly as much as they—I do not want to say a fanatical viewpoint—but it still is along those lines that we had years ago. I think since these organizations went to work we have a far more commonsense viewpoint of the problem. We are looking at it from the broad picture now of a great resource that is equal to water, to air, for instance, or soil, rather than just some limited use such as sport fishing or something like that.

The CHAIRMAN. To what extent have the industries themselves moved to improve their public relations position in the matter by making an effort themselves to eliminate pollution.

Mr. MACDONALD. There again we have what I mentioned here a few minutes ago. They are changing their processes and they are changing their methods of housekeeping.

We had, for instance, in the paper company——

The CHAIRMAN. I frankly appreciate your saying that. I must admit, however, that I am having difficulty getting a picture from what you say.

Mr. MACDONALD. All right.

The CHAIRMAN. Could you be more concrete about it rather than general?

Mr. MACDONALD. Well, from changes in process we have probably lightened our total pollution load about 15 percent; that is, from change in process. From housekeeping I would have no idea how much we have lowered it because that is a thing almost impossible to put your finger on. But I think with the contemplated changes in process that I know about throughout the State that we will make a lot better showing in the next few years than we have in the past few.

The CHAIRMAN. Is that going to come about by reason of the action of your committee, the action of the legislature, the action of industry, or all, and if so to what extent on the part of each?

Mr. MACDONALD. I think that to a great extent the industries and municipalities see us coming. In other words, they know that eventually——

The CHAIRMAN. Do you have a pistol in your hand?

Mr. MACDONALD. I am afraid not sir, figuratively or otherwise.

The CHAIRMAN. In my State, industries that contributed to substantial pollution of our streams realized that more and more they were being held up to public scorn and they sensed such an arousement of general indignation against them that to some degree at least they mobilized themselves and assisted the State enforcement agencies, not only with reference to the abatement of their own pollution but contributing toward the elimination of it by industry generally.

Mr. MACDONALD. That is true to some extent here. I started to cover that. For one thing they have seen us coming and know that we will be with them in 5, 10, or maybe more years. But they are already making their plans for the changes that they will bring about. A great many of them are now putting those changes into effect because they have been exposed to public opinion and they want to keep the public relations on a high level.

Senator MUSKIE. Would you want to comment on the municipal sewage problem, particularly with respect to the Federal-State program of grants?

Mr. MACDONALD. Yes, sir. We have not made a good showing in the municipal program in view of all the aid available.

The CHAIRMAN. In view of what?

Mr. MACDONALD. In view of the aid we have available to us here in Maine. In other words, there is the Federal aid that will contribute up to 30 percent of the cost of treatment work and on top of that we have State aid and the State will underwrite two-thirds of the Federal in the way of aid.

I think we have only now four projects underway. One of them is a rebuilding project. One of them is practically finished. It is in the last stages. The other one is about to start although it is being processed by the Federal Government and the other one is about midway. Those are the only ones that we have had since the start of the program. I think that one of our troubles there was the lack of planning that had preceded the coming about of Federal aid.

I think very few State governments expected that to happen, and I am sure the municipalities did not give much thought to it.

Now, we have a plan in assistance program in the State. It is not quite as much as it should be, to be sure, but it is a help and also a great many of the municipalities in planning have taken advantage of the House and Home Finance plan under 560. That is a big help to us.

We here in Maine would very much dislike to see anything happen to the Federal aid assistance either under 660 or under 560. We think that what little progress we have made has been due largely to the Federal aid and to the State aid.

If they stay with us we will make a lot more progress.

The CHAIRMAN. You have not used the total amount of Federal funds that have been allocated to you?

Mr. MACDONALD. No, we have not. We have only used about $500.-000. The project that I mentioned——

The CHAIRMAN. Of how much?

Mr. MACDONALD. Of the total Federal aid that has come our way amounts to $2,519,000 approximately.

The CHAIRMAN. You used about 20 percent?

Mr. MACDONALD. We used about 20 percent of it. Of course, not all of that has reverted or has lapsed, because there is currently available about a million and a quarter.

Senator MUSKIE. Do you think that the failure to develop momentum in this program is due wholly to the planning, the lack of planning, advanced planning up to now?

Mr. MACDONALD. Not entirely, Senator Muskie. But I think it is one of the key things. I think there is a little bit of lethargy about getting started there. I think the fact they have not a plan is the key inasmuch as without that plan nobody knows what the proposition is. They do not know what is the best administrative quality for them. Neither do they know how much it is going to cost. So the proponents of such a program are not in such a position without knowing what it is going to cost to go out and sell the project.

Senator MUSKIE. Is there evidence of mounting momentum?

Mr. MACDONALD. Yes, sir.

Senator MUSKIE. Could you forecast what that is likely to produce in the way of activity and the number of projects in the foreseeable future?

Mr. MACDONALD. I think that, and I hope that it will occur before the first of next July, I think there will be at least two more projects come in, and I think that those will amount to just about half of the money that we have currently available. We are going to have some lapse in July. I hope it will amount to the $600,000 we would have lapsed in July. In other words, what we will use between now and July 1.

Senator MUSKIE. Still pretty slow.

Mr. MACDONALD. It is still pretty slow. Maybe I am overoptimistic, but I think there is a good chance of it.

Senator MUSKIE. With respect to the major rivers, the Kennebec, Androscoggin, and the Penobscot would you be prepared to give the committee any valuation relative to industrial versus domestic sewage pollution?

Mr. MACDONALD. That is a very hard thing to do because the yardsticks by which you measure them are somewhat different.

In one case, we might have damage to a water resource by sanitary sewage. In other words, the chloroform count in the water, as in a bathing area or shellfish area, or something like that, is a limited factor while in the other it is the loss of oxygen. Statewide I do not have the major rivers separated, but Statewide if we use only dissolved oxygen for a yardstick the industrial load is several times the municipal load.

Senator MUSKIE. In terms of oxygen content which of the major rivers is in the worse shape at the present time?

Mr. MACDONALD. Again, they are far apart. We have made a study recently of the Kennebec River and we know its position on the scale, but we really do not know exactly the condition of the Androscoggin and the Penobscot. I do not think if there is, there will be a segment of heavy pollution and then a segment where the water uses could be somewhat higher. Just how those segments would total

up in the respective rivers, I do not know. But let us say in all of them we have segments of fairly good water.

I mean in the areas where the State is populated we have fairly good water. We also have the streams degraded to the verge of a nuisance and sometimes there are odors coming from them.

Senator MUSKIE. What percentage of the oxygen content of our major rivers is now committed?

Mr. MACDONALD. Is now committed?

Senator MUSKIE. To the pollution.

Mr. MACDONALD. Well, in the heavily populated sections of the State, in the industrialized and populated sections, there in a great many of the segments all of the oxygen content is committed to what is already there.

We have segments in between these areas of heavy committment that are better and conceivably we could work additional loads in there assuming that we were to let the river work only as a carrier of wastes.

Senator MUSKIE. How many sewage treatment plants do we have in the State?

Mr. MACDONALD. We have 21 sewage treatment plants of sorts. A great many of these sewage treatment plants are obsolete. Most of them are only taking in a part of the population in the town in which they are located. In other words there are maybe 10 percent of the town treated and the rest goes direct without any treatment whatsoever.

But of the bona fide treatment plants we have one in operation at Winthrop now; we have had one at Presque Isle for a number of years and that is undergoing renovation. We have several at government installations. We have a few small treatment plants along the coast also.

Senator MUSKIE. What percentage of our total population is served by sewage-treatment plants?

Mr. MACDONALD. We have a population of around between forty and fifty thousand served by treatment plants of one sort or another. We have a population of about 653,000 sewer-connected.

The CHAIRMAN. That is what?

Mr. MACDONALD. 653,000 that are sewer connected. In other words, we can take the 40,000 to 50,000 out of that and we will have those that go in untreated.

Senator MUSKIE. That leaves about 300,000 not sewer connected at all?

Mr. MACDONALD. It is more than that, sir. It means about 600,000. Just about 40,000 or 50,000 are treated with treatment plants and about 650,000 that are sewered.

Senator MUSKIE. I think it would be well if you could give us also——

The CHAIRMAN. Just a second. Would you yield, Senator?

Of the numbers served to some degree, what would you say is the percentage that is treated out of those that are partially served?

Mr. MACDONALD. Out of those that are treated the 40,000 or 50,000 there are very few plants that are more than primary, and therefore we could assume it is about one-third of the oxygen demand of the waste that is relieved.

The CHAIRMAN. In other words, you would say generally that half of your population is not served at all and that two-thirds of that which is served is about one-third efficiency.

Mr. MACDONALD. Yes. By and large I think we have a little misunderstanding there.

The CHAIRMAN. How is that?

Mr. MACDONALD. I think we have a little misunderstanding there.

The CHAIRMAN. I am only trying to get the facts.

Mr. MACDONALD. My figure is that we have 40,000 to 50,000 that are served by treatment plants. We have 650,000 that are served by sewers. Therefore, we have at least 600,000 served by sewers that do not pass through treatment plants. Now, of that 40,000 or 50,000, nearly all of those are tributaries or primary treatment only. Therefore, there is only of the BOD value of that sewage removed.

The CHAIRMAN. With reference to the 40,000 or 50,000.

Mr. MACDONALD. With reference to the 40,000 or 50,000.

The CHAIRMAN. None of it in reference to the 600,000.

Mr. MACDONALD. None of it in reference to the 600-odd thousand.

The CHAIRMAN. What is the total population of the State?

Mr. MACDONALD. 900-and-some thousand—between 900,000 and a million.

The CHAIRMAN. Then there is 350,000 of no service?

Mr. MACDONALD. With no public sewer service. They have——

The CHAIRMAN. 600,000 sewer service that is not treated.

Mr. MACDONALD. 600,000 sewer service not treated; 30,000 to 50,000 is treated.

The CHAIRMAN. About 33 percent efficiency.

Mr. MACDONALD. At about 33 percent efficiency.

Senator MUSKIE. I wonder if you could give us a picture of the problem with respect to onshoreline beaches.

Mr. MACDONALD. Let us say that our beaches would be improved by treatment of sewage. I certainly hope it will be. We are, of course, not the agency that determines whether bathing water is dangerous or not, but we do determine whether or not it needs our classification, and we feel that the sewage treatment would certainly improve some of our coastal waters for recreation uses.

Senator MUSKIE. To what extent do your beaches have a pollution problem.

Mr. MACDONALD. If the pollution problem is considered to start at the point where the beaches would be closed, then I do not think we have any pollution problem. If it is considered to start at the point where they could be improved, I think we have a consideration in almost all of our beaches that we ought to work toward improvement.

Senator MUSKIE. Are these pollution problems relative to our beaches due to industrial pollution or domestic.

Mr. MACDONALD. Almost universally domestic.

Senator MUSKIE. I do not know whether you consider this a loaded question or not. I will ask it. You may treat it as you wish. Do you think that the authority to abate pollution should rest in the legislature or in the water improvement commission.

Mr. MACDONALD. That is a very difficult question to answer, and my own personal opinion is that it is all right as it is now. The thing that we need is more understanding of the problem and perhaps a

better public viewpoint, or at least that the people who make the classifications are better aware of the public's viewpoint.

I think that pressures and so on might have a great deal more effect on the commission than they would have on the legislature. I think it would be very difficult for a commission to operate if they had that power. I do not think the State as it is now is quite ready for that. Perhaps there will come a day when everybody's conception is such that that would work. But for the moment I would say it is all right as it is.

Senator MUSKIE. Has the legislature upgraded or has the legislature fully accepted the commission's recommendations for upgrading?

Mr. MACDONALD. No, sir; they have not.

Senator HART. Mr. Chairman.

The CHAIRMAN. Senator Hart?

Senator HART. I must have missed the point some place in the proceedings here. In Maine, if there is serious pollution suddenly developing in a stream, what happens?

I will begin at the beginning.

Mr. MACDONALD. If serious pollution suddenly developed in a stream we then have to recognize the problem as what it is. Is the problem developing in the classified stream or is it developing in a stream under which we do not have classification jurisdiction?

The CHAIRMAN. In other words, what you are saying is, if it develops where they have the license to pollute or where they have not a license to pollute. That is what you mean by "classified stream."

Mr. MACDONALD. The classified stream—we use the licensing to keep pollution down or keep it within limits until we can affect classification.

Now, if this situation that Senator Hart mentioned developed—of course any classified stream—it would be a violation of the classification and we would go at the source of this pollution responsible for that on that basis. If it developed——

Senator HART. In what form? Would you go to court?

Mr. MACDONALD. Not immediately. We would try to do it by negotiation. If all else failed, then the court is the last resort.

Then, if the same situation developed in an unclassified stream, then our powers might be limited. In other words, when we issued a license we would be sure that we issued it with such restrictions that that would not happen. If it were a concern operating under license, then we would make him live up to the provisions of his license. If it were a problem of pollution that came from a grandfather's clause, polluter, so-called, then we would not have those powers.

Senator MUSKIE. We have no power with respect——

Mr. MACDONALD. No power except such powers that might be taken under correction of a nuisance or something like that and that might not be the water improvement commission. Conceivably, it would not.

Senator HART. I think that for those of us from the State where this is not the law, apparently conditions must be different, we might have a better understanding if I ask this question: Has this been the historical approach of the State of Maine throughout its history? When you came over there was the old English concept with respect to pollution of streams. How did you get into this situation?

Mr. MACDONALD. You mean the concept of common law, that you had to use it, and that still you had to use it and return it essentially as you took it as far as the riparian rights of others are concerned.

Senator HART. Yes.

Mr. MACDONALD. I think that is actually in effect today. But it is not always brought about. In other words, it is not always taken advantage of.

The CHAIRMAN. You mean they do not take advantage of their opportunity to return it in as good condition as they got it?

Mr. MACDONALD. I mean—well——

The CHAIRMAN. Is that what you said?

Mr. MACDONALD. That is true, of course, Senator.

But I meant it on the other end.

The CHAIRMAN. As I understand now what you have said amounts to telling this committee that the domestic sewage is treated to the extent of about 2 percent with 98 percent untreated?

Mr. MACDONALD. Is it as bad as that? Let's see—it is better than that, Senator.

The CHAIRMAN. As I understood it, the treatment applied only to the sewage of about 45,000 people and that that was about one-third effective.

Mr. MACDONALD. We have nullified the effect of the sewage of 2 or 3 percent of the people.

We have treated 8 percent.

The CHAIRMAN. What figure is that? What percent is 8 percent of the million?

Mr. MACDONALD. Well, 8 percent of the sewered population.

The CHAIRMAN. I am talking about the total population.

Mr. MACDONALD. Yes; that is right.

The CHAIRMAN. The total number, with reference to how many the sewage was subjected to any treatment, was about 45,000.

Mr. MACDONALD. Yes; we consider outside of that public sewer group, and we have the rest of the State of Maine that presumably go into septic tanks, into cesspools, and that sort of thing, and that the sewage—except as seepage—does not reach a stream. So, except for these sewers, we do not consider that that other group is a polluted group.

The CHAIRMAN. I would say that is a very charitable presumption. It may be entirely accurate. It would be a little unusual if it were.

I believe one witness—it might have been you—said industrial pollution was many times that of your domestic pollution.

Mr. MACDONALD. By BOD, it is several times higher than municipal.

The CHAIRMAN. Thank you very much.

Senator MUSKIE. I think we interrupted your formal statement. Is there more in your formal statement, Rae?

Mr. MACDONALD. I think I covered most of it.

I would like to reiterate again, though, that we feel that the key to our success in eliminating this problem is the continuation of the Federal aid as it now is or, better, under both Public Laws 560 and 660.

The CHAIRMAN. I will tell you this. As far as the personnel of this committee is concerned, that will be the case; of course, that attitude is not binding on the Congress.

But we are hopeful. I would say at least as much basis for our being optimistic in that regard as you have established for the optimism for which you expressed.

Mr. MacDonald. My optimism depends on your success, sir.

Senator Muskie. Thank you, Rae.

Mr. Cobb. Mr. Chairman, the next two speakers have brief reports but it will depend on the wishes of the committee on questions as to how long they will be.

I will introduce the director of our State parks, Lawrence Stuart.

STATEMENT OF LAWRENCE STUART, DIRECTOR, STATE PARKS, STATE OF MAINE

Mr. Stuart. Honorable members of this Senate committee and Congressman Oliver, my name is Lawrence Stuart, director of State parks. I have already prepared a formal statement which has been submitted along with the group. Apparently, I seem to be the first speaker this morning who is engaged in a little different field but a very important aspect of Maine's livelihood; namely, recreation.

I would like to point out to you that recreation is Maine's second largest industry and that water and water quality plays a very important part in recreation. You come to Maine and enjoy its recreation but, without water, to me it would be comparable to going skiing without snow.

The State park commission is charged with the responsibility of preserving and interpreting certain outstanding scenic areas of the State to the visitors and to its citizens in this greater recreational picture.

And we are naturally quite concerned with the quality of water 20 years from now. We are also becoming increasingly concerned about the quality of water along the coast. Our population centers, of course, are in the southern part of the State.

We have just been able to enter into an acquisition program of new areas for State parks, one of which is on the coast of the State. That water has a classification and we, of course, if we are going to put in a sizable investment of the State's tax money, we want to be sure that the water quality on that part which is an ocean beach is maintained for all of the years to come to be of sufficient quality for people to enjoy the water.

I think that we have some 23 parks throughout the State now. We are adding two or three in the next 2 or 3 years. At this point I think it is safe to say that pollution, either human or industrial, has not entered or been any deterrent to the establishment of any State parks.

You look at the map behind you—with 80 percent of our State acreage in water acreage in pretty much wild land we have not found any obstacle in establishing State parks in this area due to getting the land. Plus, we have the land, though, plus the water. It is an important part of the park and I would just summarize the State parks' condition stand that it is concerned more with the quality of water 20 years from now than it is with quantity.

Senator MUSKIE. I wonder since this subject has been raised earlier, Larry, whether you can give us a brief description of this proposed national park in the Allagash area.

Mr. STUART. Senator, I wish I could. Last week I was in touch with the National Park Service and as I understand it the proposal is still on the drawing board. Within a month or so a preliminary draft of that will be presented to Maine's delegation and the resource commissioners and the Governor of the State for discussion and for clarification and recommendation. But as late as last week the National Park Service assured me there had been no plan submitted as yet. Until such time as the State parks commission has a plan and studies the plan it has not taken any stand.

Senator MUSKIE. To the best of your knowledge is it still a national park which is being considered with the restrictions on harvesting of timber and game management and hunting?

Mr. STUART. I tried to get some information on that at the recent conference in California and about all that I could say is that one of the propositions which is being considered is a park of less acreage than the three-quarter million which was originally planned. A park which might have a cord and a cord, so to speak, which would be a national park in which there is no hunting and no forest management, as we think of that—fishing of course allowed—but a much greater area surrounding it of national forest in which forestry practices could be continued and in which hunting could be allowed and so forth. That is the pattern of course in many of the national parks throughout the country. I think of Grand Canyon Park right away. Would they have taken the canyon area on two sides and made that the national park and then surrounding it with the forests in which hunting and forestry practices are allowed. It may be the Allagash, due to its topography, that might have a narrow area which could be the so-called wilderness type of protected wilderness as a core surrounded by an area which might be open to forest management and fishing and hunting.

I just say that that was one of the things that was discussed in the group that I attended but it may not come out that way at all.

Senator MUSKIE. I wonder if there has been supplied to the committee a copy of the park commission's 10-year development plan.

Mr. STUART. I believe it has not been but it will be.

Senator HART. Mr. Chairman?

The CHAIRMAN. Senator Hart?

Senator HART. Your discussions were with the representatives of the Department of the Interior with respect to the park.

Mr. STUART. My discussions were with representatives of the National Park Service who work under the Department of the Interior.

Senator HART. Have you any opinion as to the appropriateness of having parks in Interior and Forest and Agriculture? Does this complicate life for you? Would it be easier if these two very major undertakings of the Federal Government were concentrated in one rather than two offices.

Mr. STUART. We have no such areas in the State. We are fortunate or unfortunate in having a very, very small percentage of land acreage under Federal control. The only national park we have in Maine, of course, is Acadia, which is very small acreage percentagewise. I

just would say that in the many States that I have visited in coming across the country this summer visiting States which have State parks and National parks and talking with State park men I found very little to be feared in the way of National versus State park control.

Senator HART. I was addressing myself to the question at the Federal level only. Were you describing the possibility of having a core in the interior, a park——

Mr. STUART. Yes.

Senator HART. And the peripheral area part of the national forest which would be in the Department of Agriculture. And I was wondering whether you felt that this was the more manageable method of handling these two undertakings or whether it would make the better sense to have it in either Interior or——

Mr. STUART. Sir, I do not know. The States that have had experience would have to supply that.

Senator MUSKIE. Thank you, Larry, for your statement.

Mr. COBB. Our final speaker, Mr. Chairman, is Mr. T. T. Trott, Jr., director of the division of research and statistics, department of labor and industry.

Mr. Trott.

STATEMENT OF T. T. TROTT, JR., DIRECTOR, DIVISION OF RESEARCH AND STATISTICS, DEPARTMENT OF LABOR AND INDUSTRY, STATE OF MAINE

Mr. TROTT. Mr. Chairman and members of the committee.

As Mr. Cobb just stated I am director of research and statistics for the State department of labor and industry, and I act as economist for the Maine Inter-Agency Resource Committee.

From today's testimony you will see and have seen that our problems are not so much adequacy as they are quality and equity of use. Improvement of management practices compatibility of multiple-use competition has gained water resources for us and will provide better water resources.

We must assure, however, the quality and quantity of that resource for our future existence by taking steps either voluntarily or by legislative action as are necessary to provide that assurance.

In the testimony of the members of the committee a few questions were raised which we can answer from the record that was submitted in the so-called green sheets.

One question that Senator Kerr asked as to agricultural acreage currently there are about a million and a half acres. The anticipated acreage is slightly over a million by 1980.

On the electric power——

The CHAIRMAN. Does that include the pasture acreage as well as the cultivated?

Mr. TROTT. That is crop acreage, sir.

The CHAIRMAN. But not the pasture acreage?

Mr. TROTT. I do not believe so; no.

The CHAIRMAN. Do you have that figure?

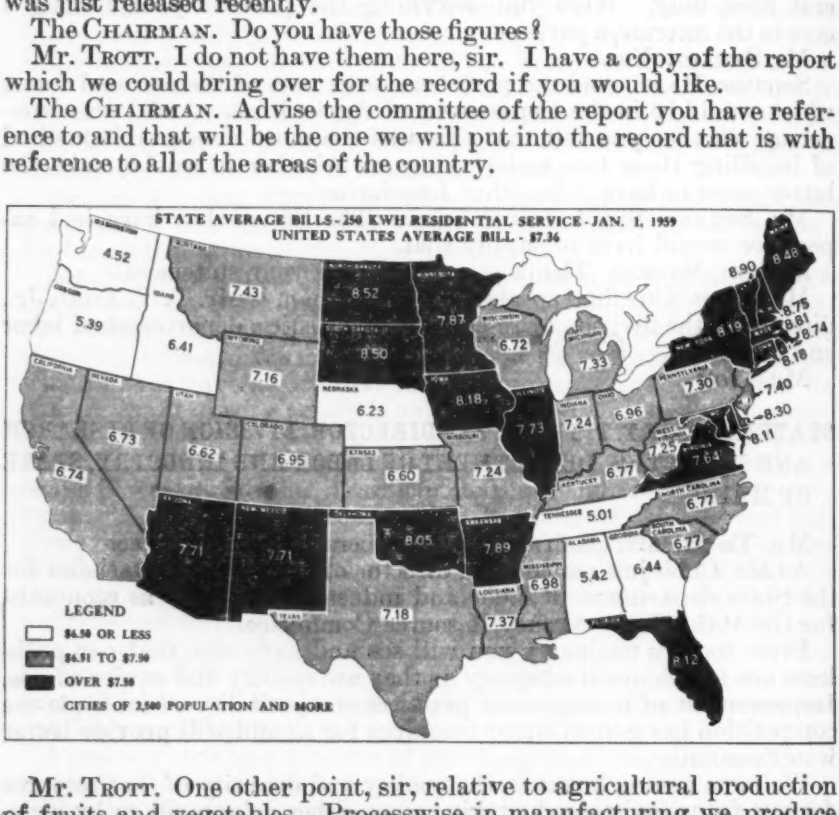
Mr. TROTT. I do not have that figure, sir, no. But I think Commissioner Newdick will supply that for the record.

Another comment was made relative to electric power rates. The Federal Power Commission report is made as of January of each year listing typical utility rates by type user, residential, commercial or industrial, in the State as a whole and for several selected major cities in the State. This is available now, I believe, for January 1959. It was just released recently.

The CHAIRMAN. Do you have those figures?

Mr. TROTT. I do not have them here, sir. I have a copy of the report which we could bring over for the record if you would like.

The CHAIRMAN. Advise the committee of the report you have reference to and that will be the one we will put into the record that is with reference to all of the areas of the country.



Mr. TROTT. One other point, sir, relative to agricultural production of fruits and vegetables. Processwise in manufacturing we produce about $40 million a year of canned and frozen fruits and vegetables. This is primarily in the area of potatoes, corn, cheese, and blueberries.

The CHAIRMAN. Has the potato industry of Maine been a beneficiary of a growing market for processed potatoes?

Mr. TROTT. Yes, sir.

Currently, I believe there is at least one and perhaps two plants, I believe, manufacturing plants for processed potatoes in the instant mash field. There are several other companies that are engaged and have been engaged for some years in either canning or other processing for frozen purposes of potatoes.

The CHAIRMAN. Is that operation calculated to give you a broader market for potatoes than has heretofore been the case?

Mr. TROTT. Yes, sir.

Even potatoes, of course, perish so any processed product gives better stability in the long range to the market. We are expanding that portion of the market. Our production has increased to the point so

that we are not taking away our fresh market but we are expanding and stabilizing our income.

The CHAIRMAN. In other words, that program is increasing rather than diminishing the market for Maine potatoes.

Mr. TROTT. That is right, sir.

The CHAIRMAN. What is this rumor that seems to be around that the Idaho potato may be of equal quality?

Mr. TROTT. Purely a rumor, sir, and has no substantiation in fact.

The CHAIRMAN. No basis for it.

Mr. TROTT. No, not at all, sir.

Commissioner Wilkins added one other point, in terms of ownership of commercial forest lands. Out of 16,600,000 acres which were itemized in this particular report, State ownership acounted for 41,000 acres, municipalities 51,000 acres, Federal 91,000, and a balance in private ownership of 16,400,000 acres.

The CHAIRMAN. Is there any limitation in Maine on the amount that one person or one corporation can own in number of acres?

Mr. TROTT. Not that I know of, sir.

Senator MUSKIE. There are no other questions.

Thank you, Mr. Trott.

STATEMENT OF T. T. TROTT, JR., DIRECTOR OF RESEARCH, STATE DEPARTMENT OF LABOR AND INDUSTRY

For the record, my name is T. T. Trott, Jr., director of research for the State department of labor and industry and a member and economist for the Maine Inter-Agency Resources Committee. From today's testimony and prior data submitted to this committee you will see that our problems are not so much in the realm of adequacy but rather of quality and equity of use. The conscience of Maine's industry can be somewhat less on the defensive in the knowledge that it is making progress, slow as it may be, toward compatability in multiple uses of our natural resources. As municipalities begin to realize their own responsibilities and stop trying to shift all the onus of pollution to industry, great strides will have been made in the qualitative upgrading of our waterways. Improvement of management practices, both agricultural and in forestry, has and will provide for a better water resource. Our water provides a necessary element for human, plant and animal, and industrial life and we must assure the quantity and quality of that resource for our future existence and prosperity—taking whatever steps, either voluntary or by legislative action, as are necessary to provide that assurance.

I would like to cite a few answers from the report filed with this committee to questions asked during this morning's testimony.

Approximately $40 million per year of fruit and vegetable products are canned or frozen in Maine including such items as potatoes, corn, peas, beans, and blueberries; total manufacturing production in Maine is $1¼ billion per year. Current total acreage in agricultural production is approximately 1½ million acres and the anticipated acreage by 1980 is slightly over 1 million.

Relative to the question asked as to power rates comparatively within the State of Maine and elsewhere in the Nation, the Federal Power Commisison publishes an annual report, FPCR–58, called Typical Electrical Bills. This report covers January of the year under consideration and the data furnished is by class of user that is, residential, commercial, and industrial, and by area (State and major cities).

If I may, I would like to again reemphasize the policy aims of our committee as applied to water.

1. Research and inventory of the resource.

2. Education of the users to the necessity of mutual and multiple use, and finally, to determine means by which multiple use, with equitability to all, may be assured.

Senator MUSKIE. I take it, on the list of witnesses, we are down now to Mr. Walter White.

The CHAIRMAN. Are you addressing yourself to the number of witnesses yet remaining to be heard?

Senator MUSKIE. Yes.

The CHAIRMAN. I am unable to tell how many of those listed will have been replaced by the evidence that we have just heard.

Senator MUSKIE. We have remaining on the list, and I can only guess, Mr. Chairman, as to what their interests are, but I think I could make an educated guess.

The CHAIRMAN. Let us first get the identity of them.

Senator MUSKIE. We will begin with Mr. Walter White.

The CHAIRMAN. What about Mr. Allen?

Senator MUSKIE. Mr. Allen's testimony, I take it, has been covered by Mr. McMahon's appearance.

The CHAIRMAN. It that correct?

Mr. MCMAHON. Yes.

Senator MUSKIE. And Mr. Langlois also already testified and Mr. Trott has already testified.

The CHAIRMAN. Yes.

Senator MUSKIE. So we are down to Mr. White.

The CHAIRMAN. And from there on?

Senator MUSKIE. Yes. Reverend Heywood will not be here today?

The CHAIRMAN. Will he file a statement for the record?

Senator MUSKIE. No, I think not.

The CHAIRMAN. We will recess for 45 minutes.

(Whereupon, at 12:30 p.m., Monday, December 7, 1959, the committee recessed to reconvene at 1.15 p.m., the same day.)

AFTERNOON SESSION

Senator MUSKIE. Mr. Chairman, the next witness is Mr. Walter G. White, of the New Hampshire Water Resources Board. Mr. White is also a member of the Northeastern Resource Committee, I think, the chairman. I do not know what the subject of his discussion will be this afternoon.

Before Mr. White begins his testimony, I suggest, Mr. Chairman, that we include in the record at the point of Mr. Tani's testimony this morning, this résumé of the Northeastern Resource Commission.

The CHAIRMAN. Very good.

Senator MUSKIE. You may proceed, Mr. White.

STATEMENT OF WALTER G. WHITE, CHAIRMAN, NEW HAMPSHIRE WATER RESOURCES BOARD, CONCORD, N.H.

Mr. WHITE. Mr. Chairman and members of the Senate Select Water Committee, it is with a great deal of pleasure that I am here today representing the State of New Hampshire. My name is Walter White. I am chairman of the New Hampshire Water Resources Board, and formerly chairman of the Northeastern Resource Committee, Senator Muskie. It has now been changed.

The water resources board has jurisdiction over all of the public waters in the State of New Hampshire. I count it a privilege to dis-

cuss our mutual problems with your very important committee and I commend its members for the policy of holding this series of public hearings. All of us realize how vital to our welfare and security is the intelligent development and utilization of our great natural resources. How this is to be done is a matter of great concern, and rightly so.

Largely through individual initiative and private enterprise our Nation has become wealthy and strong. Our responsibilities are worldwide; however, in our more recent past, we have found ourselves looking more and more to Washington for the solution to our problems.

This is not good, and I hope this committee will find a way to encourage lower levels of government to participate in a program of orderly development of our water resources.

The CHAIRMAN. With all the respect in the world, I was interested in your statement. Would you identify for the record what are the lower or lowest forms of government?

Mr. WHITE. I do not know as I like the term when you say the lowest forms.

The CHAIRMAN. You referred to them. I was just asking you.

Mr. WHITE. I mean our State government and our city government.

The CHAIRMAN. Now, we refer to them just the opposite in our country. That is all right. It is nice to have your remarks on the record.

Mr. WHITE. It makes a difference where you sit.

As a representative of the State of New Hampshire, I must give consideration to how matters affect my State; however, in dealing with what shall be for the greatest good and benefit to the people of New Hampshire, I feel one should not be too circumscribed. The economy of New Hampshire responds to, and is directly affected by a host of factors outside its geographical boundaries.

For me to limit consideration strictly to the defined boundaries of my State would be to overlook actuality. Absolute self-sufficiency is no longer a condition applicable to a single State. New Hampshire looks to the markets of New England and beyond for the disposal and sale of its products.

The products of our industries, as well as our farms, find their most receptive market not in New Hampshire alone but elsewhere. The economy of my State is dependent in no small degree, upon the strength, the vitality, the vigor and the prosperity of the surrounding region. The greater the number of idle New England factories and the more defunct New England industries and the greater the number of unemployed New England workers, so to a corresponding degree the production of our goods shrink and wither.

These factors are pertinent to our inquiry, for water is an important part of this picture. They are pertinent not only to the economy of the State of New Hampshire but to each and every one of the New England States.

What I am trying to say is that New England is a region and we must find a way in our system of government to treat it as such.

New Hampshire is a member of a number of interstate compacts. Many of these compacts embrace all of the New England States. The New England States are now working on another compact for water resources and related land uses. Four of the New England States

have passed the enabling legislation and Congress will be asked to ratify the compact and to provide for Federal membership.

You will hear more about this at Boston, tomorrow, when the chairman of the Northeastern Resource Committee will appear before you.

New England is going so far in this direction as to jointly finance and staff a common office outside of New England for the purpose of getting more recreational business. I mention this to demonstrate that we are more and more thinking and acting as a region. It is hoped that this committee will recognize this trend and give it due importance in your final consideration.

It is my opinion that the divided responsibilities of Federal agencies for water resource planning is the greatest handicap to comprehensive plans. It is not suggested, however, that one Federal agency be responsible for all matters pertaining to water resources, for the simple reason that it would be politically impracticable.

Even though a Federal agency of cabinet rank, with exclusive jurisdiction over water resources, would be desirable, it is not probable that such a drastic reorganization of our Federal agencies could be accomplished at this time. Therefore to give meaning and direction and to bring forth a long-range comprehensive water resources program, with a schedule for development and utilization of this priceless resource, water, we need a top coordinating agency. Without detailed and exhaustive discussion, for the problem is clear, it is suggested that this committee give serious consideration to the establishment of a single Federal agency with full powers to compel compliance—some one agency should have this responsibility of setting forth to the Nation a program of water resource development and utilization—a program that will be adequate to meet the needs of our dynamic growth. Congress could then see to it that such a program was carried forward in an orderly manner.

In my work as chairman of the New Hampshire Water Resource Board I make recommendations to the New Hampshire Legislature on matters pertaining to flood control. I have participated in the drafting and enactment into law of two flood control compacts and at the present time I am a member of two flood control compact commissions.

There is need for review of Federal real estate acquisition policies. To the best of my knowledge, Congress has never specified the formula on which the Federal Government will buy properties for flood control projects. In my opinion greater consideration should be given to advance planning, the timing of land takings, appraisal practices, and the effect in surrounding areas. Present Federal real estate policy creates hardship for property owners who know they must sell but do not know when or for how much.

Once a flood control project is authorized it should be followed immediately with sufficient funds to acquire all property at once and construction should be expedited by all reasonable means.

An authorized project produces a blighted area if construction is delayed. All building and property maintenance stops, highway programs are delayed, business becomes uncertain, workers seeing their jobs will disappear leave prematurely for new positions out of the area.

All of these things and many others result in economic losses to individuals, corporations, and the community. Our interstate flood control compacts provide for reimbursement of all economic losses that are not speculative. An additional burden should not be imposed.

In the purchase of property a "willing buyer, willing seller" formula is not a realistic approach. We have neither the "willing buyer" nor the "willing seller" in a flood control project where hundreds of homes will be uprooted and in addition the seller is forced to buy in a sellers market if he is to remain in the locality. It is time that Congress should make its intent clear by the enactment of suitable legislation.

On September 10, 1958, I was a member of a workshop panel on flood control in New England at the New England Public Works Planning Conference.

I quote from one of our recommendations.

A number of authorized projects that are today inactive because infeasible serve to delay and complicate authorization of new projects. Procedures are required to automatically review projects and deauthorize them if changed conditions preclude their future constructions.

One answer may be authorization of systems rather than individual projects, with authority to make changes as the need arises.

Flood control on the Merrimack River in New Hampshire was authorized as a system. It has given flexibility and has been successful.

There are other matters of interest to New Hampshire which will be presented to this committee by other speakers at your hearing in Boston, tomorrow. As an authorized representative of Governor Powell of New Hampshire, and as a member of interstate compact commissions and committees, I have collaborated with those that will make the presentations. I will therefore refrain from taking your time by being repetitious. I thank you for the courtesies extended to me.

The CHAIRMAN. Thank you, Mr. White.

Senator MUSKIE. Thank you, Mr. White.

The next witness, Mr. Chairman is a witness whose name I am sure is familiar to all of us and requires no extensive introduction.

I am pleased to present Mr. Leland Olds, the Northeastern Rural Electric Cooperatives.

The CHAIRMAN. I want to say we are glad to hear from Mr. Olds who is one of the better authorities in this country in the matter of water resources development and power generation. I know of no abler authority on this subject.

STATEMENT OF LELAND OLDS, NORTHEASTERN RURAL ELECTRIC COOPERATIVES

Mr. OLDS. Mr Chairman and members of this Senate committee, I feel we are engaged in one of the most important tasks that this country has faced in years.

My name is Leland Olds. I appreciate this opportunity to appear before your committee on behalf of the members of the Northeastern

Association of Rural Electric Cooperatives and the Municipal Electric Association of Massachusetts.

My statement, although brief, is based on about 30 years of experience with the water resources of this region—as executive secretary of the Power Authority of the State of New York; member of the Federal Power Commission, with particular responsibility for river-basin work; member of the President's Water Resources Policy Commission, 1950–51; and representative of the Secretary of the U.S. Department of the Interior on the New England-New York Inter-Agency Committee, 1951–53. Since 1953 I have kept abreast of the further studies of all these rivers.

Both groups are paying unnecessarily high rates for their bulk wholesale power supply, and are interested in the consistent application of Federal water resources policy in this region so that they can obtain the advantages of a competitive source of power supply.

I would like to say in connection with that first paragraph that although I shall be dealing to a considerable extent with the power aspects of the water resources problem that it does not represent my entire interest in this matter.

Mr. Cobb this morning suggested an alternative to the Rankin Rapids project on the St. John River which would preserve the nationwide famous white water canoe trip on the Allagash River. That idea, that alternative project, originated while I was representing the Department of the Interior on the New England-New York Inter-Agency Committee, and was submitted in a memorandum over my signature. I am going to ask permission subsequently to file that memorandum and another memorandum on the Kennebec River program indicating the extent to which it is possible to adapt the power development to the needs for recreation.

The CHAIRMAN. Those memorandums will be made part of the record.

(The information referred to follows the conclusion of Mr. Olds' testimony.)

The CHAIRMAN. Go right ahead, Mr. Olds.

Mr. OLDS. I will begin by emphasizing three important considerations which have been deliberately overlooked or rejected here in the Northeast, and then I shall turn to a brief comment on the significance of the report of the New England-New York Inter-Agency Committee and the more recent International Joint Commission report on Passamaquoddy.

First, I want to suggest that one of democracy's greatest steps forward in terms of the future of its civilization is embodied in the principle and technique of unified multiple-purpose development of its river basins for flood control, conservation storage, water supply, irrigation, navigation, hydroelectric power, pollution abatement, recreation, and conservation of fish and wildlife.

The principle was the product of the conservation movement which got its great impetus from the 1908 Governors' Conference on Conservation, called by President Theodore Roosevelt. The method was developed most completely in the administration of President Franklin D. Roosevelt, particularly through the Tennessee Valley Authority experiment.

I emphasize this today in order to call the committee's attention to the fact that, tragically for the New England States and for the entire northeastern part of our country, that principle is not being applied to the region's rivers. The opposition of a certain kind of State isolationism or antifederalism, played on by power, rail, and coal interests, has blocked the true multiple-purpose planning and development of the region's river basins.

As a result, flood control has been delayed; regulation of streamflow has not made the rivers the cleansing, recreational assets they could become; and their hydroelectric power potential has not been fully developed.

Subsequently, I shall comment on the sad results of the New England-New York Inter-Agency Committee survey to illustrate this point.

Second, I want to suggest that one of democracy's most important contributions to assuring a low-cost energy economy, the electric power age which we are really only just entering, is the mixed enterprise approach in which the people always have a choice between so-called private enterprise, public ownership, and cooperative ownership in providing such public services as electric power. If time permitted I could show you how this has consistently meant lower electric rates, improved power technology and greater stimulus to economic development.

But here I want to point out that, in terms of modern power technology, that choice is no longer a real thing unless all systems, regardless of size, are assured ample supplies of bulk power from what must become regionally integrated wholesale power systems, using large modern steam units to carry base loads and hydroelectric power for peak loads and reserve capacity.

The availability of such power supply to municipal and cooperative systems has been best assured where the Federal Government, or in some instances State agencies, have developed and integrated hydroelectric power as a part of multiple-purpose river basin programs.

I stress this today because in New England, and more generally in the entire Northeast, that influence on wholesale power costs has been lacking. As a result, here in New England, some 80 municipal and cooperative rural electric systems are paying an average of about 1.4 cents for wholesale power supply. That is 1.4 cents per kilowatt hour. It is more than double the rate which rural electric cooperatives are paying private companies for power supply in the Southeast, the Southwest, and the Northwest, where power from Federal river basin programs has been a competitive influence.

Third, I want to suggest that hydroelectric power, developed in connection with full control of our river basin systems, is going to play an increasing, rather than a decreasing, part in democracy's next step forward in its dynamic power policy. I refer to what was originally christened "giant power" by Gov. Gifford Pinchot of Pennsylvania.

Giant power takes full advantage of the tremendous reductions in capital and operating costs available from giant steam-generating units and stations, located as closely as possible to fuel production and ample supplies of water for condensing purposes, integrated through

extra high voltage transmission grids with hydroelectric developments providing most of the peak load and reserve capacity.

Many people today are susceptible to the argument that this very giant steam power progress is rendering hydropower out of date. That is because they don't understand the special characteristics of hydro. About 10 years ago, Mr. E. Robert De Luccia, then Chief of the Federal Power Commission's Bureau of Power, speaking before the Western Society of Engineers, emphasized that hydro capacity, with its ability to start from standstill and synchronize with load in a small fraction of the time required for steam units, is going to be vitally important for peak load and reserve purposes.

I might comment in passing that, when you are installing steam generating units, single units of as much as 450,000 and 500,000 kilowatt capacity, enough to supply the residential electricity for a city of 4 million in one unit, you have to have something to come on the line quickly in case of nonscheduled outage or anything that might happen to that particular unit.

To illustrate what I am talking about I show you this map that I prepared myself, which is sort of amateurish, which symbolizes a giant wholesale power grid to meet the needs of the country's northeastern region by 1975. In 1958 utility generating capacity in this region totaled 62 million kilowatts with an output of about 284 billion kilowatt-hours. By 1975 it will require at least 140 million kilowatts of generating capacity with an output of perhaps 650 billion kilowatt-hours.

Federal Power Commission estimates show that undeveloped hydro which, through full river-basin development, could assist in meeting these requirements, totals about 15 million kilowatts with a potential annual output of nearly 50 billion kilowatt-hours.

In addition to New England rivers, concerning which I shall have more to say, this includes among others the Delaware, Susquehanna, Potomac, James, and Roanoke Rivers, as well as the Ohio River Basin, exclusive of its Tennessee and Cumberland tributaries.

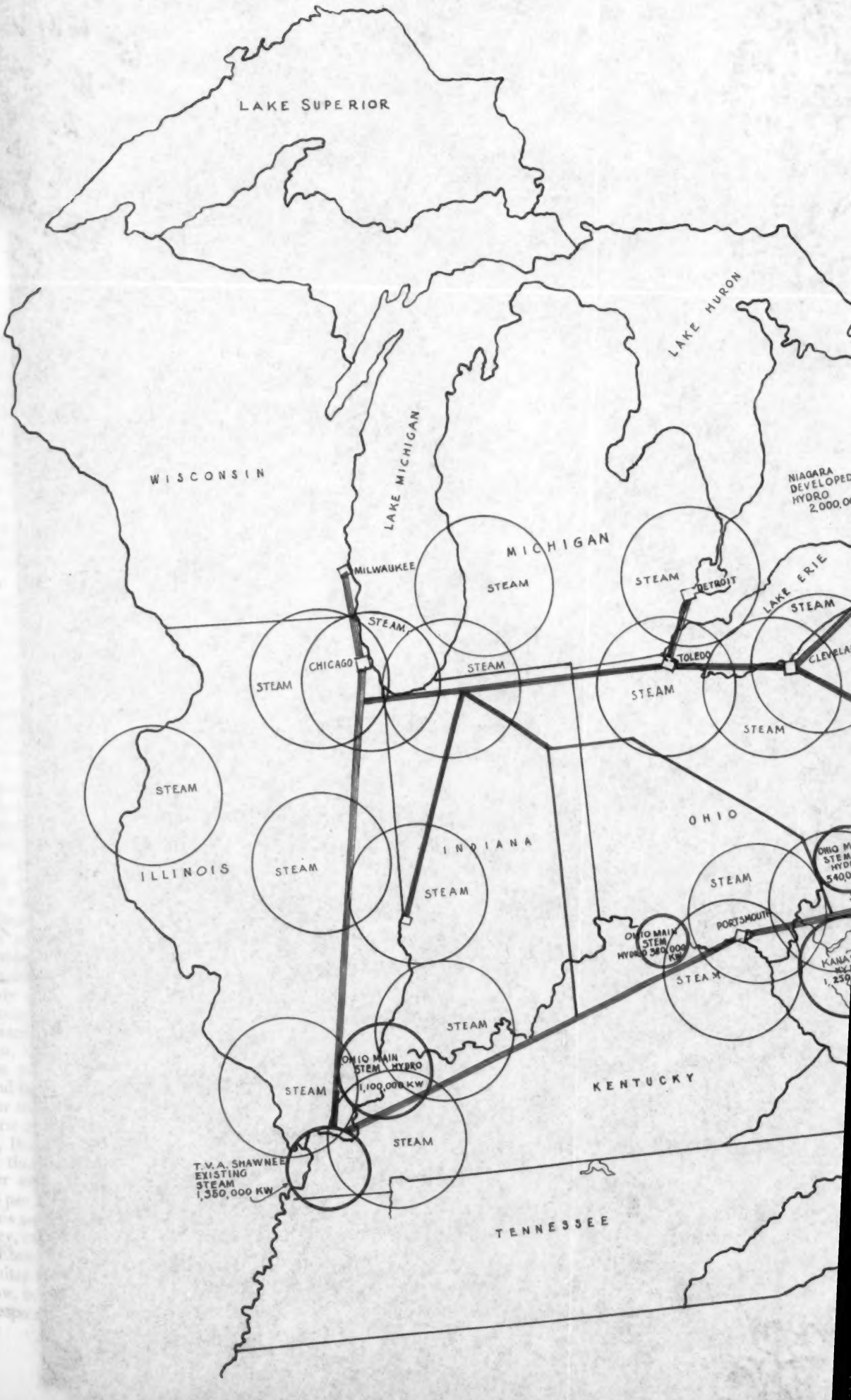
It does not include the Niagara and St. Lawrence projects which have already been developed by the New York Power Authority.

The general location of this hydro is shown in the following tables:

Potential hydro available for northeastern grid

River basins	Capacity (kilowatts)	Energy (thousand kilowatt-hours)
Maine	1,262,600	4,773,600
Other New England States	1,465,800	3,701,100
Middle Atlantic (excluding St. Lawrence and Niagara)	5,318,000	12,571,800
East north-central (excluding Wisconsin)	2,477,850	10,154,000
Maryland, Virginia, and West Virginia	3,725,900	13,293,100
Kentucky (excluding Cumberland and Tennessee)	1,066,500	4,457,300
Total	15,316,650	48,950,900

I have listed here 15 million kilowatts of hydroelectric power that are available as a part of that interconnected system. I am not going to take time to go into that at this point except to call your attention to the fact that 1,262,000 kilowatts of undeveloped power, or



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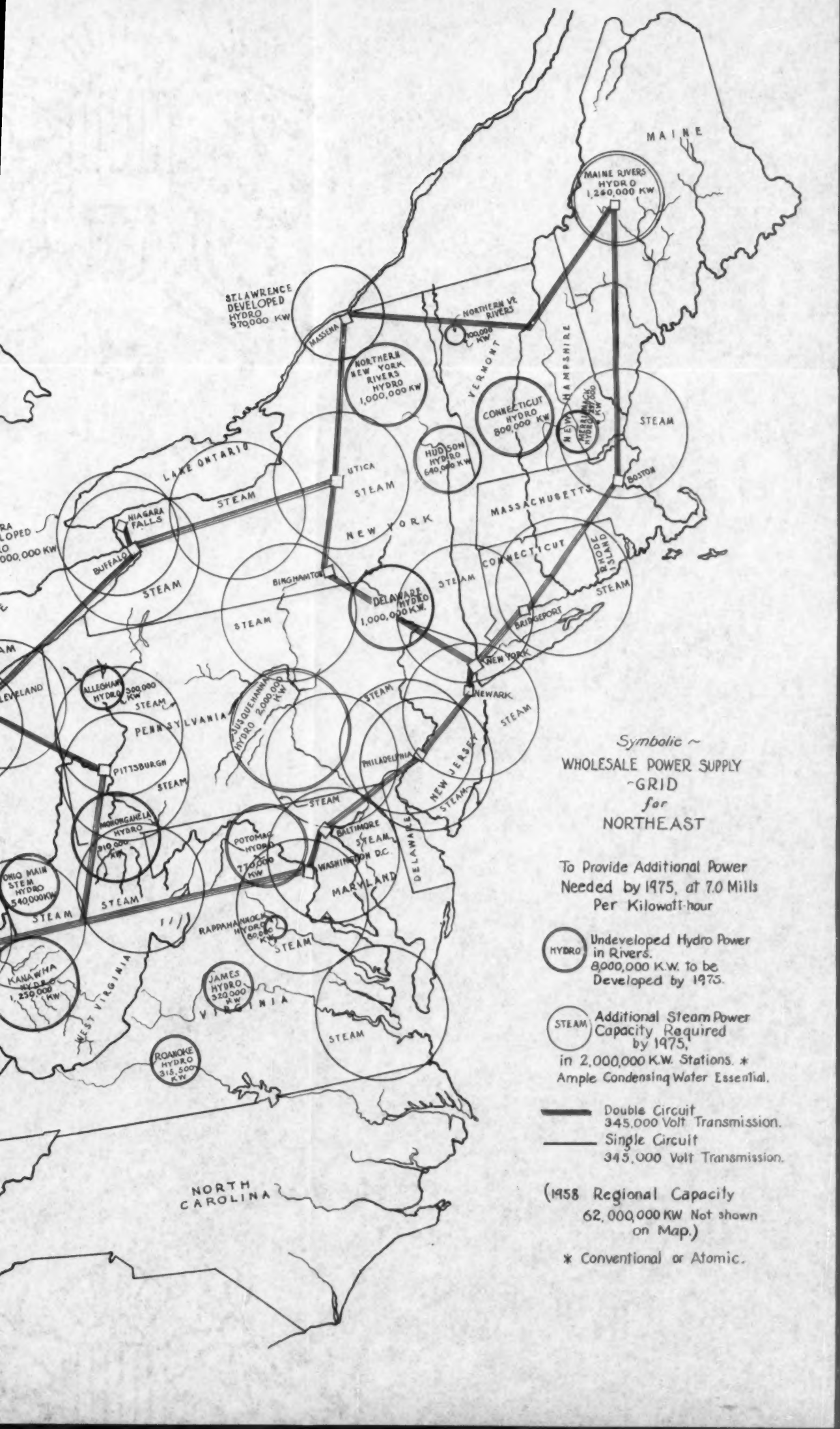

Symbolic ~

WHOLESALE POWER SUPPLY
~GRID
for
NORTHEAST

To Provide Additional Power Needed by 1975, at 7.0 Mills Per Kilowatt-hour

HYDRO — Undeveloped Hydro Power in Rivers. 8,000,000 K.W. to be Developed by 1975.

STEAM — Additional Steam Power Capacity Required by 1975, in 2,000,000 K.W. Stations. * Ample Condensing Water Essential.

Double Circuit 345,000 Volt Transmission.

Single Circuit 345,000 Volt Transmission.

(1958 Regional Capacity 62,000,000 KW Not shown on Map.)

* Conventional or Atomic.

nearly 5 billion kilowatt-hours of electric energy, are right here in Maine in spite of what you have heard here today about Maine and its hydropower being nearly completely developed. This is potential power. This is available potential undeveloped power.

The other New England States have nearly 1½ million kilowatts of this undeveloped power, provided the right kind of river basin programs are undertaken.

You see the location of most of this hydropower on the map in the blue circles.

And assuming that 8 million of this 15 million kilowatts of undeveloped hydroelectric power in the Northeast is used before 1975 to carry peak loads in this system, there will be a need for the equivalent of 72 new 1 million kilowatt steam electric stations, generating some 350 billion additional kilowatt-hours per year to meet the region's needs in 1975.

I have tried to indicate on the map in 2 million kilowatt circles what the location of the equivalent of 36 two-million kilowatt stations will mean in the power planning of the Northeast.

The problem is, of course, to get the capacity as near as possible to the points where you have low-cost fuel and also water for condensing purposes.

In that connection I might point out that the Potomac Electric Co. is building a project called the Dickinson plant on the Potomac River and having to add to the cost of that station to build a little single-purpose dam in order to get the necessary condensing water that would be unnecessary if the Potomac had been developed on a multiple-purpose basis.

Most of these steam electric stations will be fired with conventional fuel. Some will be atomic, especially in New England. But, combined with present steam-generating capacity which is carried over, they will require fuel equivalent to at least 225 million tons of coal. So there is little ground for coal industry opposition to sound river-basin programs including hydro for peaking and reserve capacity purposes.

On the map, the high tension transmission grid that pools this vast supply of power is shown as a double-circuit 345-kilovolt system. Technical progress may eventually indicate higher voltage such as the Russians have underway.

But, based on steamplant cost figures which power company witnesses placed before Congress in connection with certain bills to amend the Holding Company Act to permit joint ownership of giant power stations, as well as upon analysis of the costs of the American electric power system with its 345-kilovolt grid reaching into Michigan, Indiana, Ohio, Kentucky, West Virginia, and Virginia, I estimate that the giant power grid symbolized on my map could make power available at substations throughout the region for about 7 mills per kilowatt-hour.

This assumes full use of modern generation and transmission technology, including the lower cost hydro project construction forecast by Ebasco Services, outstanding power company engineering consultants.

Now, how is the Federal river-basin program meeting its share of the responsibility for assuring the region low-cost power supply along

these lines? Members of the committee are probably aware of the fact that throughout the entire region there is not a single Federal multiple-purpose river-basin project including hydroelectric power. I am going to deal specifically with this sickness in terms of New England. But I shall first touch briefly on a few of the other river basins of the region.

The Corps of Engineers, in a report prepared for the President's Water Resources Policy Commission, told that body that there were vast amounts of undeveloped power in the Ohio River Basin, but added:

> Interest engaged in the production of coal in those States are firmly opposed to hydroelectric power development by the Federal Government because of their belief that such development would result in reduced use of coal. Public utilities and transportation interests serving the coal industry also are generally opposed to such developments (p. III–8).

I think I suggested just a moment ago that the coal industry has everything to gain and nothing to lose by such a combined hydro and fuel steampower approach.

The fact is that the Ohio basin program is going ahead largely on a single-purpose navigation or flood control basis without the multiple-purpose conservation storage and power projects in the headwaters which would also regulate flows for power development at the new higher dam navigation projects on the river's main stem.

In the Delaware River Basin all indications point to a combination program in which any power development will be left to private power companies.

In the Potomac Basin the Corp of Engineers has been directed by Congress to limit its current restudy to single-purpose matters like water supply and to ignore the river's power potential.

In fact, in spite of the obvious need of the Washington metropolitan area for augmented water supply and silt control, recreation interests are pressing for a park bill which would come close to condemning that river to eternal undevelopment.

And a representative of the Corps of Engineers has just told the James River Development Association in Virginia that the multiple-purpose program for the river is now uneconomic under the evaluation procedure required by the Federal Bureau of the Budget.

Meanwhile, the Appalachian Power Co., constituent of the American Electric Power System. and the Virginia Electric Power Co., are proposing to go ahead with two hydroelectric projects on the upper Roanoke River—the Smith Mountain and Gaston projects—with combined capacity totaling more than half a million kilowatts. At those sites the Federal Power Commission estimates show only about one-third of that capacity. I shall now turn directly to the NENYIAC report.

The NENYIAC report leads essentially to a single-purpose rather than a multiple-purpose approach to the development of the region's rivers. After all its labors, it brought forth a series of inventories of the potentialities of the region in the various fields studied rather than comprehensive plans for full use of the region's river basin resources on a multiple-purpose basis.

A reading of the letters of comment from participating State Governors and Federal agencies leaves the impression that the main accomplishment was the establishment of an executive council to make

all policy and practical decisions by majority vote of State and Federal representatives.

This enabled certain State representatives to accomplish what the utility interests had been battling for since the 1930's, a final veto, apparently accepted by the Federal agencies, of Federal multipurpose river-basin programs including conservation storage and development of hydroelectric power.

The apparent acceptance of this result by Federal agencies may well be explained by the fact that final decisions were made after the change of administration in 1953.

In terms of the welfare of the States, and particularly of the municipal and rural cooperative electric systems, for which I am speaking today, the most significant decisions gave NENYIAC's blessing to the divorce of flood control and power. The committee then proceeded to evaluate the power projects on a single-purpose basis, assuming private fixed charges, and found them economically unjustified.

In other words, the NENYIAC report lists the flood control projects, noting that one or two have multiple-purpose possibilities, and finds that they have estimated flood control benefits of $12,400,000 a year, as compared with annual costs of $10,558,000. These costs are, of course, determined on the basis of Federal financing. It then lists all potential power projects for which "the annual benefits were estimated to be about six-tenths of the estimated annual costs." The report explains:

> A benefit-cost ratio of less than unity was selected as a criterion in order to insure complete coverage of the hydroelectric potentialities of projects which might become feasible for development as a result of changing economic conditions (p. 32–33).

The real reason for using the 0.6 to 1.0 benefit-cost ratio for screening projects on the basis of private fixed charges was the assumption that this was equivalent to 1 to 1 ratio if the projects were publicly financed. The Federal agencies were obviously discounting a possible change of administration, as well as New England's attitude toward the undertaking of Federal multiple-purpose river basin programs which have brought advantages to other parts of the country.

On this basis, having found that the St. Lawrence-Niagara combination had more than a 1 to 1 ratio, and that the Rankin Rapids project on the St. John River in Maine just sneaked through, the report found the rest of the projects in the power inventory not presently justified. Yet, in the previous discussion of flood control, the report says:

> The flood control plans, as augmented by the power reservoirs that may be constructed, and the land treatment measures, if installed, would provide a high degree of protection to major damage centers (p. 30).

The extent to which this setting up of a separate single-purpose flood control program, divorced from an unfavorably appraised inventory of hydroelectric projects, represents a departure from long standing engineering judgment in the matter can be understood only in terms of a long background which I can only sketch here. It will be found in detail in a book entitled "Flood Control Politics" by William E. Leuchtenburg, published in 1953 by the Harvard University Press.

The broad facts are that following the disastrous 1927 flood in New England, the Boston Society of Civil Engineers, under the leadership of H. K. Barrows of the Massachusetts Institute of Technology, set up a committee to study the situation. In a series of reports, supported by the committee, Barrows stated that flood control could only be economically justified as power storage. He provided both Vermont and New Hampshire with overall plans for carrying out this recommendation through establishment of river regulating districts. The creation of the New Hampshire Water Resources Board, which built the Pittsburg Dam as a Connecticut River tributary, was a result of this recommendation.

Subsequently, in 1936, when the Corps of Engineers came along with their "308 report" for the Connecticut River, they said that although floods were compartively frequent and caused serious damages in the Connecticut River Basin, a comprehensive plan for flood control would be justified only if there was power development as well.

Down to the 1944 Flood Control Act, the Corps of Engineers were for multipurpose programs in the Connecticut and Merrimack River Basins. The contrast with the NENYIAC report and the single-purpose flood control programs which are today going forward in both basins is significant—significant, among other things, of the success of the private power company battle to prevent municipal and rural electric cooperative systems in Maine, New Hampshire, Vermont, and Massachusetts from obtaining a competitive source of power supply.

I shall illustrate the situation by brief reference to the Connecticut and Merrimack River programs. But first, I want to call attention to the failure of the NENYIAC report to give any consideration to possible regional gains through integration of hydroelectric developments.

The failure of the NENYIAC report to deal realistically with the value of the waterpower resources of the region is perhaps best illustrated by the lack of reference to the possibility of gaining 416,000 kilowatts of dependable hydroelectric capacity by integrating the operation of the St. Lawrence River project of the New York State Power Authority with the operation of power developments in the rivers of northern New England and northeastern New York. This plan is described in the report of the President's Water Resources Policy Commission, volume II, "Ten Rivers in America's Future," part II, chapter I, the Connecticut River, 1950.

This report, on the basis of Federal Power Commission, Bureau of Power analysis, showed what could be done to assure low-cost power for New England and New York through coordinated planning and operation of 41 river-basin projects with 1,043,000 kilowatts of installed capacity and an annual output of 3,824 million kilowatt-hours in New England, 11 such projects with 123,000 kilowatts of capacity and 505 million kilowatt-hours of output in eastern New York, and the St. Lawrence project with 940,000 kilowatts of capacity and about 6,600 million kilowatt-hours of output.

The New England hydro embraced in the hypothetical integrated power supply included 10,000 kilowatts from the St. Croix, 195,000 kilowatts from the Penobscot, and 260,000 kilowatts from the Ken-

nebec Basins in Maine; 107,000 kilowatts from the Androscoggin River in New Hampshire and Maine; 128,000 kilowatts from the Merrimack River in New Hampshire; 318,000 kilowatts from the Connecticut River in New Hampshire and Vermont; and 25,000 kilowatts from the Winooski-Lamoille Basin in northern Vermont.

The report indicates that the gain of 416,000 kilowatts of dependable capacity over the St. Lawrence and New England hydro development separately operated would be due (1) to the combined adaptability to meeting changing load characteristics; (2) to the diversity of seasonal and cyclical power, including the timelag in critical low St. Lawrence flow with respect to low flows in New England; and (3) to the effect of ice cover in diminishing availability of St. Lawrence power. The report states:

> The cost of combined hydroelectric power delivered to market (9.7 billion kilowatt-hours after transmission losses) has been estimated at about 6 mills * * *. It is estimated that a market area including northeastern New York and Vermont, New Hampshire, and Maine, could absorb the above-combined and coordinated output on a 55 percent load factor by about 1970 (p. 505).

The St. Lawrence project is now developed, with Vermont getting a share of this power. And the New England Power Co. has also developed the upper 15-mile falls project on the Connecticut River to a capacity of 140,000 kilowatts. But the concept of coordination is still important and should be broadened to include integration with giant steam power stations on the New England coast to assure savings of as much as 4 mills per kilowatt-hour in the present standard cost of transmitted wholesale power supply in New England.

No sound conclusions can be reached as to the full contribution of New England hydro to the power economy of the region until the studies embrace the possibilities of a regional power supply system combining baseload steam located where fuel costs are lowest and hydro, including pumped storage, for peakloads and reserves. Today, integration of hydroelectric power from multiple-purpose developments in the rivers of northern Vermont with Vermont's share of St. Lawrence power would give the rural electric and municipal systems of the State better break than they are getting from St. Lawrence power alone.

The CHAIRMAN. Can you tell us at this point the average cost of power in New England?

Mr. OLDS. I made a calculation before I came here of the cost of power supply taking into account the necessary fixed charges and the necessary operating costs, the necessary fuel costs of the New England Power Co., which operates the major projects on the Connecticut River and which supplies the wholesale power to a considerable number of systems in Massachusetts and to one New Hampshire system—I found their cost, as I recall it, to be about 1.20 cents per kilowatt-hour and they sold it wholesale for about 1.30 cents. I figured if you had modern power supply in New England with private fixed charges, but with the fuel costs that are required to be paid in New England at the present time, that power costs on an economically organized power supply basis, could come down by about 4 mills, down to just over 9 mills, and that it would be perfectly feasible with the competitive influence in the picture to work toward a saving

of 4 mills per killowatt-hour in the power supply cost of that particular system which I took as the largest system in New England.

I want to turn very briefly, as I said, to the Merrimack and Connecticut River programs to illustrate what I am talking about.

The present Merrimack River Basin single-purpose flood-control program includes three already constructed projects—the Franklin Falls Reservoir on the Pemigewasset, the Edward MacDowell project on Nubanusit Brook, and the Blackwater Reservoir project on the Blackwater tributary. Under construction is the Hopkinton-Everett Reservoir on the Contoocook-Piscataquog. Authorized, but inactive, is the Mountain Brook Reservoir on the tributary of that name. All are in New Hampshire.

The Hopkinton-Everett project has just been dedicated by Vice President Nixon. According to a Federal Power Commission memorandum, dated December 1, 1941:

> One hundred-fifty million kilowatt-hours of electrical energy annually, or nearly one-half the potentiality of the Merrimack River will be sacrificed should the Hopkinton-Everett Reservoir be built.

The memorandum continues:

> This is because the plan would place the main flood-control reservoir capacity below rather than above the power sites. This would destroy the multiple-purpose possibilities of river basin development by eliminating the control of streamflow required to make the Contoocook power projects economically sound.

When the Federal Power Commission opposed the Hopkinton-Everett project on this basis in accordance with its responsibility under the 1938 Flood Control Act, the Corps of Engineers set up a consulting board of three independent engineers to review the controversy. The Board supported the general position of the Commission.

The Merrimack Basin flood-control program should be promptly revised as a multiple-purpose program to eliminate the Hopkinton-Everett project and to authorize in its stead the Bennington and Beard's Brook conservation storage projects and not less than the Long Falls and Riverhill power projects included in the NENYIAC report inventory, with a combined total of 32,000 kilowatts and 99,500,000 kilowatt-hours per year output. In addition, a 10,000-kilowatt installation producing 27 million kilowatt-hours per year should be authorized with necessary modifications of the existing Blackwater project. All these are in the Contoocook River subbasin.

On the Pemigewasset tributary, the Livermore Falls project, included in the NENYIAC inventories of both flood control and power projects, should be authorized with 135,000 acre-feet of flood control and 170,000 acre-feet of power storage. The authorization should include at least 24,000 kilowatts of new hydroelectric capacity capable of generating 69,800,000 kilowatts-hours annually.

The suggested conservation storage would make possible the development of as much as 58,000 kilowatts of additional capacity at one new and a number of existing Merrimack River power developments, offering an additional 218 million kilowatt-hours in annual energy.

Altogether, this Merrimack Basin multiple-purpose program could provide an important competitive source of power supply for the New Hampshire rural electric cooperatives and for the municipal electric systems in eastern and central Massachusetts. And by this I do not mean that installations at the projects need be adapted to the load fac-

tor of such public and cooperative systems. Rather, they should be adapted to coordination with the integrated large steam plant economy on which the future power supply of the entire region will be dependent.

But under contracts assuring the best use of this hydroelectric potential, the Government can assure preference customers under the 1944 Flood Control Act ample supplies of the kind of power they need at much lower prices than they are now paying.

The Corps of Engineers lists 16 authorized flood control reservoir projects as complete, under construction, or active in the Connecticut River Basin. These would provide a combined flood control storage of 607,716 acre-feet. It also lists 8 other authorized flood control projects in the basin as deferred or inactive. These would add 314,000 acre-feet of flood control storage. Only two of these are listed in the NENYIAC undeveloped power inventory—the Victory project on the Passumpsic River in Vermont for power storage only, and the Gaysville project on the White River in Vermont with a potential of 20,000-kilowatt capacity and 33 million kilowatt-hours of average annual energy.

The President's Water Resources Policy Commission listed 28 undeveloped hydroelectric power possibilities in the basin which, including redevelopments, offered 830,000 kilowatts of capacity and 2,232 million kilowatt-hours of average annual energy. They also offered 1,031,400 acre-feet of active storage capacity. The Commission indicated that 22 other new and redeveloped projects would bring the totals to 952,000 kilowatts and 1,241,000 acre-feet of storage, and noted that—

> other reservoirs not having power developed at the project sites would increase the total undeveloped storage capacity in the basin to about 1,500,000 acre-feet.

The Commission stated further that, if the listed projects were found feasible as a partial alternative to the single-purpose flood control program—

> it is estimated that major floods would be reduced by more than 16 feet at Alcott Falls, 11 feet at Bellows Falls and Turners Falls, 5 feet at Holyoke, and 7 feet at Enfield, just above Hartford, Conn.

Six of the projects in the Commission's undeveloped hydroelectric power inventory, with a total of 162,000-kilowatt capacity and 319 million kilowatt-hour annual output, are also included in the Corps of Engineers list of flood control projects completed, under construction, or active. But the Commission's list would result in a very important modification of the presently authorized program, to include the 120,000-kilowatt Williamsville project on the West River in Vermont with its average annual output of 110 million kilowatt-hours and 220,000 acre-feet of active storage. As previously noted, the New England Power Co. has already constructed the upper 15-mile falls projects, included in the report at 104,000 kilowatts of capacity but installed by the company at 140,000 kilowatts. This project was listed as having 225,000 acre-feet storage.

Reconsideration of the Connecticut River in terms of multiple-purpose Federal river-basin programs would result in the following immediate steps:

(1) Make sure that the Victory project is authorized to provide 71,900 acre-feet of active power storage as well as the 24,000 acre-feet provided for flood control.

(2) Authorize the Gaysville project as a multiple-purpose project with higher dam providing 77,800 acre-feet of storage for flood control and 29,200 acre-feet for power, together with 20,000 kilowatts of installed capacity.

(3) Authorize the North Hartland project on the Ottaquechee River in Vermont as a multiple-purpose project with somewhat higher dam providing 100,000 acre-feet of storage instead of the presently authorized 71,400 acre-feet, together with 90,000 kilowatts of installed capacity.

(4) Authorize the additional multiple-purpose Perkinsville Dam and Reservoir project on the Black River in Vermont, including 10,000 kilowatts of capacity and 60,000 acre-feet of reservoir storage. This would take the place of a single-purpose flood control project on this river included in the NENYIAC report but not yet authorized. It would make possible redevelopment of the existing Springfield power development on the same river to add 6,000 kilowatts of capacity with an additional output of 20 million kilowatt-hours a year.

(5) Authorize substitution of the Williamsville multiple-purpose dam and reservoir project on the West River, Vt., for the island and, if not too late, for the Townshend single-purpose flood control projects on that river. Also authorize Ball Mountain project on the same river as a multiple-purpose project with an installation of 20,000 kilowatts and an average annual output of 70 million killowatt-hours. I have already referred to the large additional capacity and energy which the Williamsville project offers the region. The new combination would more than double the reservoir storage now offered by the authorized single-purpose combination.

(6) Authorize reconstruction of two existing flood control reservoirs in Massachusetts for multipurpose use including power. This would make possible, according to Federal Power Commission estimates, development of 20,000 kilowatts with annual output of 30 million kilowatt-hours at Tully Dam on the Millers River and 10,000 kilowatts with annual output of 20 million kilowatt-hours at Knightville Dam on the Westfield River.

(7) Authorize Federal construction of the Enfield multipurpose navigation and power project in the Connecticut River above Hartford. Federal Power Commission estimates place the potential capacity of this project at 42,000 kilowatts and its annual output at 247 million kilowatt-hours.

This new combination would require the elimination of only two of the authorized flood control projects—the Island and Townshend Dams in the West River Basin, for which the Williamsville multipurpose project would be substituted. It would call for building several of the authorized projects as multipurpose rather than single-purpose projects.

The important advantage of this multipurpose approach would be the fact that it would make available 318,000 kilowatts of power for peak-loads, with an annual output of 740 million kilowatt-hours which would enable New England to take better advantage of its allotted share of St. Lawrence and perhaps Niagara baseload power. This new power developed at Federal multipurpose projects would be located so that it would be of maximum help to the rural electric cooperatives and the municipal electric plants of Vermont, New

Hampshire, and Massachusetts, enabling them to perform their yardstick function of showing the way to lower electric rates for the customers of private power systems.

It should be emphasized that these suggestions are limited to reasonable modification of the presently authorized single-purpose flood control program from the Connecticut River. Once the program is started, other potential hydro in the basin can be included.

The NENYIAC report shows that only about one-fourth of Maine's ample hydroelectric power potential has been developed—452,080 kilowatts as compared with an undeveloped potential of 1,138,900 kilowatts, assuming private fixed charges and a 0.6-to-1 benefit-cost ratio. But, with the exception of the St. John River Basin, where it found a 1.03-to-1 benefit-cost ratio, it found a ratio of less than 1 to 1 for all other Maine rivers, and an average of only 0.75 to 1 for the inventory of undeveloped power in the State.

It may be noted, however, that on the basis of NENYIAC's reasoning, the Kennebec and Androscoggin Rivers were found to have 461,000 kilowatts and 92,500 kilowatts of undeveloped power which with public fixed charges would have had better than 1-to-1 benefit-cost ratios by a considerable margin. Together with 255,500 kilowatts of St. John River power, Maine would be offered, on this basis of evaluation, 809,000 kilowatts of potential capacity, with an average annual output of 2,852,150,000 kilowatt-hours of new power, economically justified if publicly developed—which may be assumed to mean better than present power costs in the State.

But I can assert with some confidence that this undeveloped Maine hydroelectric power could be much better power than the NENYIAC Report indicates, in terms of the economic development of the State.

Specifically, my experience in the first 2 years of NENYIAC's work made it clear that the estimates being prepared for the report tended to overestimate the cost of potential hydroelectric projects.

In specific instances I had cost estimates prepared on the basis of Bureau of Reclamation manuals of cost, which showed considerably more favorable figures. I shall later submit for the record memorandums referring to Kennebec and St. John River power showing Interior Department estimates of the per kilowatt-hour cost of power from such projects.

I might call your attention to the fact, although I presume you all have heard of it, that the Dalles project on the Columbia Basin was built at a savings of $100 million. It was built for $250 million roughly, as compared to an original estimate of $350 million in costs.

Everything that is coming out about the technology of construction work where hydroelectric power is concerned is showing the way to probable savings in costs of construction as compared with estimates such as these applied today to the Maine rivers.

But more important support comes from the 1941 report on the Passamaquoddy tidal power project, prepared by the Federal Power Commission in response to Senate Resolution 62, 76th Congress, 1st session. In that report the Commission indicated that for low-cost publicly developed hydroelectric power, Maine should turn first to its rivers. It included estimates of a coordinated system of 17 hydroelectric plants on the Kennebec and Penobscot Rivers. The estimates assumed either Federal or State financing with the program carried

out in three stages. I would like to have the table entitled "Potential Hydroelectric Power Projected Plants in Basins of Penobscot and Kennebec Rivers Coordinated System of 17 Plants," included in the record.

The CHAIRMAN. All right.

(The information referred to follows:)

Potential hydroelectric power—Projected plants in basins of Penobscot and Kennebec Rivers coordinated system of 17 plants

	Stage I	Stage II	State III	Total
Number of power plants	5	8	4	17
Proposed installed capacity, kilowatts [1]	104,000	176,000	260,000	540,000
Firm annual output, thousands of kilowatt-hours	530,000	870,000	1,044,000	2,444,000
Estimated capital cost [2]	$17,565,000	[3] $38,602,000	$48,715,000	$104,882,000
Estimated annual fixed charges	$681,000	$1,543,00	$1,828,000	$4,052,000
Estimated annual operation and maintenance expense	113,000	198,000	200,000	511,000
Estimated total annual cost [2]	794,000	1,741,000	2,028,000	4,563,000
Unit cost of energy, mills per kilowatt-hour	$1.50	$2.00	$1.94	$1.87

[1] Installed capacity based on 60-percent load factor, plus allowance for reserve capacity.
[2] Federal or State financing: Cost of money, 3 percent; no allowance for taxes or insurance.
[3] Includes storage works for river regulation.

Mr. OLDS. The first stage assumed the construction of five of these plants for a total capacity of 104,000 kilowatts, capable of producing 530 million kilowatt-hours annually at an average cost of 1.5 mills per kilowatt-hour.

The second stage would have included the construction of eight additional plants with a total capacity of 176,000 kilowatts, capable of producing 870 million kilowatt-hours annually at an average cost of 2 mills per kilowatt-hour.

The third stage would have completed the program with the construction of four more plants with a total capacity of 260,000 kilowatts, capable of producing 1,044 million kilowatt-hours annually at an average cost of just over 1.9 mills per kilowatt-hour.

With the system of 17 hydroelectric plants completed, Maine would have had a combination with capacity totaling 540,000 kilowatts, capable of producing 2,444 million kilowatt-hours at an estimated average cost of just under 1.9 mills per kilowatt-hour.

On the basis of the increased cost of constructing hydroelectric projects since the date of the report, the per kilowatt-hour cost of energy from such a program should be about 2½ times the original Federal Power Commission estimates.

This means that a State or Federal program should be able to offer a considerable block of energy for electrometallurgical or electrochemical industries at a cost of about 4.7 mills—certainly at not more than 5 mills. Taking into account savings in cost of constructing hydroprojects, recognized by EBASCO services, the future cost might be somewhat less. Such power would be attractive to this kind of industry.

It should be noted that, to the extent that certain proposed projects included in the Federal Power Commission's estimates of potential hydroelectric power in Maine are designed to furnish high load factor

power for metallurgical or chemical industries, there will be a reduction in the total capacity which can be developed. For high load factor operation less capacity is used to produce approximately the same number of kilowatt-hours.

The quantity of low-cost electricity which can be expected from the Kennebec and Penobscot Rivers could be augmented by nearly 1 billion additional kilowatt-hours from future development of the St. John River in Maine. This power could be developed at approximately the same cost as that from the Kennebec-Penobscot combination.

A program for full development of the hydroelectric resources of the rivers of Maine would include considerable increase in provisions for conservation storage, establishing more complete control of the flow of the rivers. This would open the way to more economic development of Passamaquoddy power. A transmission system could be set up for use of this combination of hydroelectric developments in such a way that the added transmission cost for delivery within the northern, eastern, and central portions of Maine would be less than 1 mill.

This analysis supports the conclusion that the NENYIAC report has overestimated the present cost of hydroelectric power from Maine's river basin resources. The Federal Power Commission not only suggested that with public fixed charges Maine could obtain 2,444 million kilowatt-hours at an average annual cost of just under 1.9 mills but stated that with private financing the cost would be only 3.26 mills per kilowatt-hour which, all things considered, might today be rated as about 8.5 mill power or less than 60 percent of what NENYIAC is now showing as the cost per kilowatt-hour of Maine's total undeveloped potential and somewhat less than the 9.2 mills which it is showing for its most favored St. John River development.

The memorandums on the St. John and Kennebec Rivers, which I am submitting for the record, were prepared with the assistance of representatives of all Interior Department agencies participating in the NENYIAC work. They show that, in the interest of preserving valuable recreation and cold water fishing opportunities in those basins, we were proposing alternatives to the Rankin Rapids proposed for the St. John and the Low Forks-Pierce Pond diversion project proposed for the Kennebec.

If you are interested, I could give you quite a picture of the potentialities of what that change in the Kennebec development would mean in terms of possibility of a great State park in Maine.

The CHAIRMAN. Would you want to put that memorandum in the record?

Mr. OLDS. I will put that in the record. I would like to put it in the record after we get back to Washington.

The CHAIRMAN. Very good. This record will be held open until January 15.

Mr. OLDS. Yet, assuming 1959 construction costs and Federal financing, the alternative St. John project would have produced 990 million kilowatt-hours of energy at 3.9 mills per kilowatt-hour, allowing for downstream benefits, and the alternative Kennebec project would have contributed 923 million kilowatt-hours at 4.6 mills per kilowatt-hour.

The gains to recreation and fishing as compared with the projects now proposed would have been tremendous.

I offer these memorandums for the record.

Now, I am going to refer briefly to the Passamaquoddy report, this report which I think most of you probably have already seen.

I would like to pause one moment. There was a great interest expressed in the pollution situation in the Maine rivers. I stick to the power aspects of the thing, but I was also very much interested in other aspects when I was a member of NENYIAC. I want to tell the committee two facts which I think have a bearing on the answer to the question that the chairman of the committee asked this morning. In the first place in hearings here in Augusta while I was still a member of NENYIAC, a representative of the paper companies told the State of Maine or told the committee essentially that they had their choice between industry, with employment and polluted rivers, and lack of industry and lack of employment and unpolluted rivers.

The CHAIRMAN. Are you familiar with the fact that in most of the areas of the country where there are industries similar to those operating here that are in operation, that it had been worked out to where they have not only industry and employment but also freedom from pollution.

Mr. OLDS. I know specifically it has been worked out very effectively in Wisconsin. I think it is very important what was told you this morning, of the optimism about progress. As I recall it the Wisconsin paper manufacturers, specifically, found that they were pouring into the river about 5 percent of what the industry terms its liquor, which if salvaged could be turned into more products.

There was a very constructive and really a pioneering development in the State of Wisconsin. I do not know so much what is happening in other States, but I assume progress is being made along those lines.

The CHAIRMAN. Have you ever seen a situation where industry either on its own initiative or by reason of the State action brought about a cleanup of pollution that was followed by the industry's leading——

Mr. OLDS. I have not; no, sir.

The CHAIRMAN. I want to say I have never seen it either.

Mr. OLDS. I have heard of many instances, as I have gone around the country, on these river basins, where the representatives of the States have said that they were tremendously hesitant about going ahead with stringent regulations on pollution control if any other States had regulations that were less stringent. In other words, there was the possibility of industry moving to the States where they had the greatest freedom to pollute.

The other thing that I think is of importance to your committee in thinking over this whole question of pollution is the fact that the original report of the Public Health Service in its initial start in NENYIAC studies in this field, was on the Androscoggin River which flows out of New Hampshire into Maine.

After they had written what they thought was their best report it had to be entirely rewritten. Why? Because they were told that the first report somehow infringed on the authority of the New Hampshire State Legislature. The pollution comes out of the paper industry in New Hampshire into Maine. A lot of Maine people have

been unhappy because of the paper pollution that comes down the Androscoggin into Maine.

The original Public Health report had to be rewritten and certain alterations made in it so it would preserve the position where the Federal Government was simply advising.

I brought those out because they are so pat to the question which I have found very difficult all over the country. It is very difficult for State representatives to discuss the matter candidly because they face the industrial situation in their own State.

In the long run, as was indicated this morning, the thing comes through development of understanding rather than from the exercise of authority. I think that is true in terms of this whole situation we are dealing with. It involves not only the question of whether or not power is developed in connection with flood control projects, whether or not conservation storage is put in, instead of dry reservoirs, which are made multiple purpose as best they can by the Corps of Engineers by inviting the recreation people of the State to build some picnic tables and a few things like that around in the dry beds of these reservoirs that have a dam but no water in them. But in all of those matters the people of the State, however well-intentioned they may be, are in a difficult situation if there are powerful interests opposing the total use of the river for public purposes and the total conservation of the water.

But we have the situation where all uses of water should be considered, together with conservation storage, instead of single-purpose flood control storage becoming a river-regulating factor.

You take the Connecticut River which flows—I think it runs uncontrolled as low as 2,000 second-feet at times by Northampton and Holyoke—I have forgotten the figures right now—but you can more than double the flow in that river if, instead of putting a single purpose flood control, you put in multiple-purpose flood conservation storage. You put in what H. K. Barrows, whom I quoted, and civil engineers of Boston said is the way to get flood control in New England—conservation storage for power.

Now, turning for a moment to the Passamaquoddy project.

Analysis of the report of the International Passamaquoddy Engineering Board to the International Joint Commission raises important questions involved in the Nation's water policy. As I understand the report it finds that the most economical undertaking of this huge tidal power development would be as a joint project with the Rankin Rapids storage and power project on the St. John River, described as an "auxiliary."

I might point out that the St. John project is the project (according to the estimates I had prepared when I was with NENYIAC) that would produce power at 3.9 just under 4 mills of a kilowatt-hour.

The tidal project would have an installed capacity of 300,000 kilowatts provided by 30 generating units. The Rankin Rapids project would have dependable capacity of 460,000 kilowatts in eight generating units. The combined dependable capacity would be 555,000 kilowatts and an annual output of 3,063 million kilowatts-hours. Without the auxiliary, the dependable capacity of the tidal project would be only 95,000 kilowatts.

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I suppose you all understand why that is so, or would you like an explanation of why it is so very low?

There are two reasons. Of course, there is the ebb and flow of the tide during the day giving periods when you get greater or less heads. The fundamental reason is that you have the difference in the tide levels that come every month between the times when the sun or moon either pull opposite each other or with each other, and when they pull at cross purposes. The time when they pull together or pull against each other the tides are called spring tides, and when they are vertically at right angles to each other, when the moon is in its quarters, then you have what they call neap tides. That is a swing that makes the difference.

The neap-tide head is about 12 feet. The spring-tide head is about 25 feet for the Passamaquoddy project.

All through the months you not only have the swings of the daily tide but you have the swings between the neap and spring tides as in terms of the head, the head you can develop with this water for power purposes. I think they have a very sound proposal in terms of technology of developing the power now in the way they have set up two pools, the larger pool for the higher pool and the smaller pool for the lower pool, while at times providing an outflow from the powerhouse into the ocean instead of into its lower pool, thus providing the maximum emptying of the lower pool. It is an interesting technological problem and I think remarkably well handled from an engineering point of view. That is the way the power project will develop.

It has been generally known for a good many years that to make it feasible you have to have conservation storage behind power in your regular river basin programs.

I think as I get to Passamaquoddy the question I raise is whether there should be simply one auxiliary project or whether it should be integrated into a larger program for the development of Maine rivers so you would not have the low-cost power of the St. John diluted so much by the high-cost power of the Passamaquoddy project.

Senator MUSKIE. I have two questions here you might have the answers to.

I notice on page 13 of your statement you refer to 255,000 kilowatts of St. John River power. Were you referring to the Rankin Rapids project in that connection?

Mr. OLDS. Yes, sir.

Senator MUSKIE. What is the relationship between that figure and the 460,000?

Mr. OLDS. The original plan for the Rankin Rapids project was for less capacity, 255,000 to 260,000 kilowatts. This new project has been designed as a 460,000-kilowatt project to fit in with the combination operation of the Passamaquoddy and the so-called auxiliary station.

Senator MUSKIE. Was the same site involved?

Mr. OLDS. Yes, with a hydroelectric project you can install it in terms of your purpose. In other words, you have substantially the same amount of energy, we will say about a billion kilowatt-hours. If you install half capacity you have higher load factor. You have half the capacity and higher load factor power, the kind of power that is wanted by aluminum companies and copper companies and

titanium manufacturers and the electrochemical processes. You can install twice as much capacity but you can only use that capacity half as many hours per given kilowatt.

Senator MUSKIE. Why is that, sir?

Mr. OLDS. Because——

The CHAIRMAN. The head would produce say, 100,000 on the basis of 24-hour operation or twice that much on the basis of half the number of hours.

Mr. OLDS. You only have so many kilowatt-hours; that is the reason. If you pass the same amount of water through twice as many wheels—you can only pass it through during half the time if you install to use the full waterflow of the stream. Do I explain it?

Senator MUSKIE. Let me ask the question in another way.

Rankin Rapids as an auxiliary at Passamaquoddy that provides a dependable capacity of 460,000 kilowatts.

Mr. OLDS. That's right.

Senator MUSKIE. What would be the dependable capacity of Rankin Rapids by itself without the Passamaquoddy?

Mr. OLDS. I do not know whether I could give you that offhand. I should say it would be very close to its total capacity with the storage they are going to put behind it.

The project has the merit of encouraging Federal construction of the Rankin Rapids project, with 2.8 million acre-feet of storage. This would provide New Brunswick with the stream regulation which it needs for optimum use of its hydroelectric resources in the lower St. John River.

As I understand it, this would in turn encourage the Canadian Government to cooperate with the United States in connection with the stream storage in the Canadian portion of the Columbia River Basin. The Queen of England, when she opened Parliament a year or two ago, hinted at that fact in very broad terms.

But it is the matter of evaluation which raises the important questions of policy. The International Engineering Board, in its transmitted letter, refers to its "unusual conclusion that although the project would have a favorable benefit-cost ratio in the United States, the Canadian ratio is unfavorable."

This unusual conclusion is based on two simple facts, which nonetheless need explanation.

First, the Canadian basis of evaluation finds the cost of the combined power 11.5 mills per kilowatt-hour. I am assuming 50-year amortization, while the U.S. basis finds the cost 8.4 mills per kilowatt hour. This is apparently due mainly to the fact that the Canadian representatives assume a 4⅛ percent interest rate for both interest during construction and annual costs while the U.S. representatives use 2½ percent.

Second, the Canadian representatives apparently found the value of similar power from an alternative source in New Brunswick about 6.7 mills per kilowatt hour after allowing for transmission while the American representatives apparently found corresponding power in Maine worth about 11 mills per kilowatt hour. These figures are derived from the cost-benefit ratios in each case.

A glance at the table on page 252 of the report, showing the estimated bus bar cost of steam electric power at certain locations in

Maine and New Brunswick, may well cause the citizens of Maine to do some serious thinking about their competitive position in the matter of power to attract industrial development.

The table shows that, assuming the same type of steam station operating an average of 4,500 hours per year throughout its useful service life, the total cost of production would be 7.7 mills per kilowatt-hour in St. John and Bathurst, New Brunswick, as compared with 11.6 mills in Yarmouth and Belfast, Maine. The fuel costs are substantially the same in all locations. Two other locations in Maine are given in the report but I have not referred to those. Of course the major explanation of the difference in costs is the use of public fixed charges for the plants located in New Brunswick and private fixed charges for those located in the United States.

There is one other factor in the evaluation formula used by the U.S. representatives which merits attention in a discussion of water resources policy. Although they used 2½ percent for interest as contrasted with the Canadian use of 4⅛ percent, they decided to be consistent with Canadian practice in excluding "taxes foregone" as an artificial increase in the cost of a federally constructed Passamaquoddy-Rankin Rapids combination.

Thus in two important particulars, the American representatives on the International Passamaquoddy Engineering Board differed with the evaluation of hydroelectric projects in the State of Maine and elsewhere followed by the Federal agencies in the NENYIAC study. They used Federal fixed charges based on 2½ percent interest instead of the private fixed charges based on 5½ percent return on money used by NENYIAC to determine costs. And they rejected taxes forgone which provided a considerable element of cost in the NENYIAC evaluations of hydro projects.

The CHAIRMAN. In other words, what you are saying is the change of basis of calculation in NENYIAC was to 5½ percent return with taxes not foregone with that of 2½ percent interest with taxes foregone, the recommendations that came out of the NENYIAC report.

Mr. OLDS. That is correct. This analysis of the Passamaquoddy report in conjunction with the NENYIAC report suggests the importance of action by Congress to require Federal agencies responsible for river basin programs to determine costs on the basis of public fixed charges without including the artificial item for taxes foregone. It further suggests that the time has come for evaluation of potential hydroelectric power development in terms of the contribution which such projects can make to large, well-planned, modern regional power supply systems rather than in terms of small local steam stations at assumed load centers. In other words, what I am urging is that we approach the evaluation of these projects in terms of their place in large regional power supply rather than simply in individual terms.

One further word on the Passamaquoddy proposal. The 8.4 mill estimated bus bar cost of power will apparently be at least 9.6 mills when transmission costs are included, and these costs are based on Federal financing. This could indeed provide a material reduction in the rates which the rural electric cooperatives of the State are paying for their wholesale power supply, such payments averaging over 15 mills per kilowatt-hour to the Bangor Hydroelectric Co. and 22 mills to the Maine Public Service Co.

The CHAIRMAN. How does that tie in with the third paragraph on page 2 when you said some 80 municipal and cooperative rural electric systems are paying an average of about 1.4 cents of the wholesale power supply?

Mr. OLDS. In that one I average all the municipal plants and all the rural electric cooperatives.

The CHAIRMAN. And these statements here are limited to the two of them.

Mr. OLDS. Yes, just a few here and there.

But, before a decision is made, the people of Maine may want to know what an investigation such as the Federal Power Commission made in 1941 would show as to the results of similar Federal investment in the full development of their river basin power resources. What is clear is that full-scale planning for lower power costs in Maine, as well as in New England as a whole, could well be associated with a water resources program.

I will conclude my statement with four suggestions for consideration by this committee in its monumental task of dealing with the future use of the country's water resources:

(1) A more orderly basis should be established to assure the preperation and execution of comprehensive plans for multiple-purpose development of the water resources of the country's river basins in terms of the growing need for ample supplies of high grade water, ecnomical bulk transportation, low-cost electric power, and all phases of recreation.

In my reference to water supply above, I include irrigation. I want to broaden the concept so as not to get into too much detail.

(2) The starting point of such planning should not be a specific objective such as flood control, with reservoirs designed only to hold back temporarily a specified number of inches of runoff.

Instead, the principal objective should be conservation storage to assure expert management of all runoff in the interest of the various purposes.

The system of dams and reservoirs should be designed initially to establish maximum justifiable control of riverflows, embodying one of the most important assets of any civilization—water.

Where such conservation storage does not fully provide for flood control, the remaining needs can be met through single-purpose flood control reservoirs, additional storage through increasing the height of conservation dams, local protection works, or flood forecasting.

(3) Confusion in this vitally important field of activity should be eliminated by recognizing comprehensive river basin programs, planned on a completely multiple-purpose basis, as embodying a wholly public function to be organized, planned, and carried out on that basis.

(4) In order to maintain the right of communities to choose public or cooperative ownership of their electric service as a force for lower electric rates, consideration should be given, among other things, to whether the Federal Government does not have the obligation to use its authority over river basin development as one means of assuring a competitive source of power supply to communities which have exercised this right. Modern technology has made this necessary,

placing on Government the responsibility to do for the people what they cannot do, or do so well, for themselves.

On behalf of the Municipal Electric Association of Massachusetts and the Northeast Association of Rural Electric Cooperatives, I want to close with a word of thanks for the opportunity to appear before this important committee of the U.S. Senate.

The CHAIRMAN. Thank you very much, Mr. Olds, for a very challenging, comprehensive, and informative statement.

Senator MUSKIE. Thank you, Mr. Olds.

Any questions by the committee?

Senator Moss. No. That was a very excellent statement. I appreciate it.

Senator HART. Mr. Olds, with respect to this map which hangs over our shoulder, I sought to find a reference to it in the prepared remarks. Would you for me, and perhaps for the sake of the record, explain again briefly what this projects and what is required in order to do so.

Mr. OLDS. I did not take much time on it because I did not want you to think I was solely talking on power. I wanted to stick to the general concept of your responsibility in the field of water.

The CHAIRMAN. Let me ask you this: You have some reference to that on page 3 of your statement?

Mr. OLDS. Yes, sir. What I have done there was to show the possibilities, and I have not said who would own it. It might be jointly owned by all the power systems of the region. It might be a Federal system. Those are the two extremes. There are various ways it could be set up. It separates the wholesale power supply function, puts it into a giant 345 kilovolt grid, perhaps a 500 kilovolt grid by the time it is built. It shows there is hydro available to provide the peaking capacity and where it is located and suggests what it is going to mean in terms of planning additional steam generation capacity.

There are 36 circles, each one representing 2 million kilowatts of steam capacity on that map, located as nearly as possible to the coalfields, or where there are not coalfields assuming that they may be atomic plants, but located where you can get at least in any case waterborne coal delivery. But it shows, not the total capacity of the region in 1975, but how you could provide the additional capacity that will be required for 1975 at substantially 7 mills a kilowatt-hour delivered power, delivered to the substations. That, among other things, includes Detroit.

The CHAIRMAN. This map will be shown in reduced scale in the record.

Mr. OLDS. I would like the opportunity to perfect it a little before it is actually included and put a title on it.

The CHAIRMAN. All right, and resubmit it with any additional comments with reference to it that you care to make.

Mr. OLDS. Thank you very much.

The CHAIRMAN. Thank you very much.

(The memoranda referred to follow:)

MEMORANDUM

FEBRUARY 26, 1953.

To: Col. Girard B. Troland, Officer in Charge, Boston Coordinating Office, New England-New York Interagency Committee.

From: Department of Interior Representative, New England-New York Interagency Committee.

Subject: Comment on program for Kennebec River Basin.

This memorandum is based in a review of the preliminary report, Kennebec River Basin, distributed by Col. Harry L. Fox, April 25, 1952, with special reference to what was designated plan C for power development in the upper river basin. It has been prepared in cooperation with the Interior Department's northeast field staff, which is composed of representatives of departmental agencies participating in the NENYIAC survey, including the coordinators of the fish and wildlife, minerals, and recreation study and report groups and the chairman of the mapping subcommittee.

The purpose of the review was to seek a multipurpose approach, particularly to development of the portion of the basin adjacent to the Dead River confluence, which would adapt the plan for power development to achievement of desirable objectives in the fields for which the Department of the Interior has special responsibility. In carrying out this purpose, use was made of data from plans A and B which the Corps of Engineers had previously offered as possible alternatives for developing the power potentialities in this portion of the basin.

An important factor leading to suggested modifications in plan C was the view of the recreation study and report group that outstanding opportunities for development of a recreational area centered around Bigelow Mountain in the Dead River subbasin. This fitted in also with the attainment of objectives of the fish and wildlife group. Furthermore, the working out of suggested changes afforded an opportunity for consideration of the possibility of adapting the plan for power development to the requirements of certain mineral-using industries under study by the minerals study and report group.

The modifications in plan C, here offered for consideration, would come closer to plan A with modifications designed to meet the requirements of these other objectives. The proposed Indian Pond and Moosehead Lake power projects would remain generally unchanged. The recommendations of the recreation group for public access to water at Moosehead Lake and in the vicinity of the Forks, together with those of the fish and wildlife group for preservation and improvement of fish production opportunities in streams flowing into Moosehead, may be considered as an integral part of this memorandum.

RECREATIONAL OBJECTIVES

Considered from the point of view of the recreational requirements of the heavily populated portion of the New England-New York region, as well as in terms of the economic interest of the State, the great recreational resources offered by the State of Maine are seriously underutilized. This is due to lack of well-designed access roads, limited provision for larger properly supervised public wilderness areas, and corresponding inadequacy of facilities for camping, picnicking, boating, swimming, fishing, hiking, etc., in such wilderness areas.

In terms of recreational objectives, it was early recognized that although the scenic and recreational resources of the Kennebec Basin include mountain peaks, forests, woodland, and wilderness areas (with their many species of wildlife), and lakes and streams supporting an abundance of fish life, there are no State parks or State recreation areas in its entire 5,680 square miles. It was also recognized that a program for the acquisition by the State, or other local agency, of land adjacent to bodies of water is essential to provide adequately for public recreational use, particularly for vacations.

Study of the Kennebec Basin, with this need in mind, indicates that the Bigelow Mountain-Flagstaff Lake area offers a unique opportunity for future expansison of the public park system. The achievement of such a recreational objective, however, imposes certain conditions on the use of the water resources of this portion of the basin, including (*a*) reasonable stabilization of Flagstaff Lake levels during the recreation season, eliminating its present heavily drawndown condition, transforming it into a recreational asset, offering opportunity

for camping, boating, swimming, fishing, and scenic enjoyment; and (*b*) maintenance of the present value of Pierce Pond and its associated streams as an excellent fishing resource. To make possible the desired stabilization of Flagstaff Lake levels, it would be necesssary to assure the summer flows for power by providing compensatory storage elsewhere in the Dead River subbasin.

A brief summary of the natural recreational features of this area, provided these two conditions can be met, suggests that its recreational development may be equal to the associated power developments as a contribution to use of the resources of the Kennebec River Basin. Obviously, it offers a wider variety of scenic and recreational attractions than the now popular Baxter State Park.

Reference to the four Geological Survey quadrangles largely embracing the Dead River subbasin (Stratton, Dead River, Spencer, and Pierce Pond) reveals the following possibilities:

Flagstaff Lake, with surface level stabilized during the recreation season, would provide opportunity for water recreation throughout its length of about 20 miles. A few miles to the south, overlooking the lake, is the Bigelow Mountain Range with five peaks listed at over 3,000 feet in height, the highest of the range being 4,150 feet. A couple of miles to the north of the lake are Flagstaff and Blanchard Mountains, while to the east is Roundtop Mountain, all exceeding 2,200 feet. Some 8 to 10 miles south of Stratton, which is located at the southern end of the lake, is another mountain range with peaks rising to elevations of from 3,600 to 4,200 feet.

Excellent cold-water fishing is available in the vicinity of Flagstaff Lake, with Carry Ponds a few miles to the east and Pierce Pond with its associated streams some 6 miles to the northeast. The latter is surrounded by mountains rising to over 2,000 feet. King and Bartlett Lakes, together with Baker Pond, tributary to Spencer Stream, also contribute to the splendid fishing opportunities of this area.

About 10 miles north of Flagstaff Lake is Spencer Lake, overlooked by Spencer Mountain, Hedgehog Mountain, and Hardscrabble Mountain, rising sharply to elevations of 2,200 to 2,500 feet on either side. This lake, with its tributary streams, provides an excellent fishing resource. East of Spencer Lake is Enchanted Lake, with Coburn Mountain rising to a maximum height of over 3,600 feet above it. Some 6 miles to the northeast of Spencer Lake is a range of mountains with several peaks running to over 3,000 feet.

This whole area is a natural extension of the Rangeley Lake area, which is one of the most popular vacation areas in the State. Stratton, at the southern end of Flagstaff Lake, is 19 miles beyond Rangeley, via Highway 16. The Appalachian Trail traverses the entire area, running northeast from the Rangeley area, along the Blue Mountains, and the Bigelow Mountains, touching Flagstaff Lake, Carry Ponds, and Pierce Pond, and so on across the Kennebec on its way to Baxter State Park and Mount Katahdin.

FISH AND WILDLIFE OBJECTIVES

This area also is of considerable significance in terms of waterfowl, the Dead River subbasin providing one of the points of concentration for the breeding of wood duck, black duck, ring-necked duck, and golden-eye duck. Larger numbers of waterfowl, including other species, pass through the area during migration, with heavy concentrations observed on the recently impounded Flagstaff Lake. With local cooperation, including raising of feed on old crop fields which come down to Flagstaff Lake, the local breeding of wild ducks could be stimulated.

The area, as already noted, includes two of the important concentrations of sport fishing in the Kennebec Basin. These are Spencer Lake and Pierce Pond, with their associafed feeder streams. There is a possibility that a well-worked-out program for the Dead River subbasin may be utilized to meet a growing problem due to the appearance of yellow perch in the lower portion of this river. The species is already reported from the new Flagstaff Lake, but it is prevented from ascending very far up the North Branch by a barrier dam at Eustis.

Recently, however, yellow perch are reported to have entered Spencer Lake when the outlet dam was rebuilt. This presents a problem because Spencer Lake has always afforded excellent brook trout, salmon, and lake trout fishing. Kibby Stream and Big Spencer Stream may be less susceptible to yellow perch invasion because they are essentially headwater streams which are inherently less suitable for the development of large perch populations. And it may be possible to use a fairly deep impoundment in the reach of the Dead River below

Flagstaff Lake, with management of its feeder streams, to encourage cold-water fish populations.

Within this segment of the Kennebec Basin it is intended that fish and wildlife recommendations should be of a positive nature. Much stream fisheries and wildlife habitat would be lost under expected power operations. But it is felt that with sufficient research and proper management benefits would accrue to the resources of this area.

Fish and wild life recommendations have been made for other segments of the basin with a view to correcting existing deficiencies in the various habitats. Restoration of a lost resource, the Atlantic salmon, has also been an important consideration. It this section of the basin the major objective would be to derive the maximum potential from the new reservoirs, incoming tributaries, and adjacent land areas.

POWER OBJECTIVES

These considerations led to a reexamination of possible combinations of sites with a view to obtaining a satisfactory development of power potentialities with provision for necessary control of flow for existing downstream developments while stabilizing the Flagstaff Lake level and eliminating the use of Pierce Pond as a part of the power development complex.

This suggested compensating for the elimination of the high-head Pierce Pond diversion project, proposed in the preliminary power study report, by developing the full flow of the Dead River through the combination of a 291-foot head project at the Hurricane Mountain site and a 298-foot head project at the Forks site. A small powerplant might also be constructed at some future time at the Flagstaff Lake Dam to develop approximately 45 feet of remaining head. The reservoir created by the Hurricane Mountain development, in combination with that

Development of the full head at the Forks site would also make possible an stabilization of the Flagstaff Lake level during the recreation months May to September inclusive. In other words, the reduction in flow from Flagstaff Lake would be compensated for by the new combination, thus assuring adequate water at all times from downstream plants.

Development of a high head project at The Forks, in place of the proposed construction of two projects to develop the same head, may be found to offer the best opportunity in the New England States for obtaining a block of low-cost load factor power capable of attracting certain mineral-consuming industries. For example, it might provide the basis for an industry designed to combine minerals found in Maine with surplus New England coke to meet the region's needs for silicon-carbide abrasives.

Development of the full head at The Forks site would also make possible an important contribution toward full control of the flow of the Kennebec River, with resulting downstream power benefits. Existing storage in the upper Kennebec Basin, totaling 1,058,000 acre-feet, provides about 50 percent regulation of the river. The plan proposed in the preliminary report would only increase the total storage by 271,500 acre-feet, including the 30,000 acre-feet which will be provided by the Indian Pond project now under construction. And 237,000 acre-feet of the new storage would involve the contribution of the Dead River subbasin only.

The construction of two projects to utilize the head available between the Wyman and Indian Pond projects would utilize a negligible portion of the potential storage available in this portion of the river. Development of the same head at a single project would provide approximately 442,000 acre-feet of additional usable storage in the main stem of the Kennebec River, raising the total new storage provided by the entire program to about 710,000 acre-feet.

Utilization of this storage would contribute to the development of additional power at existing downstream developments. This is important in terms of conservation. But it is also significant because credits for downstream benefits will tend to reduce the cost of power at the upper river developments. This is important as a regional development factor.

ALTERNATIVE PLAN RECOMMENDED FOR CONSIDERATION

Based on careful hydrologic studies of various alternative plans for developing this portion of the Kennebec River Basin in such a way as best to achieve the objectives outlined above, we suggest consideration of the following alternative to the plan proposed in the preliminary report. This alternative embodies an effort to find a truly multipurpose plan for the development of the basin.

Under this alternative the proposals for this portion of the basin would consist of a high dam and powerplant at the Forks site on the Kennebec River, a dam and powerplant at the Hurricane site on the Dead River, and possibly a small powerplant at the present Flagstaff Dam on the Dead River. Flagstaff Lake would be maintained during the summer season as a recreation reservoir.

The details of this alternative plan may be summarized as follows:

(*a*) *The Forks.*—The site of the Forks project is on the Kennebec River about 4 miles below the confluence of the Kennebec and Dead Rivers. The drainage area at the site is about 2,516 square miles. The dam at this site would be about 3,700 feet long and would include an earthfill section, with concrete spillway and intake sections. The dam would be 340 feet high and would have a cutoff core 140 feet deep to bedrock. Maximum water elevation would be 805 feet and an average head of 298 feet would be obtained, with tailwater at 500 feet. A powerhouse would be constructed at the toe of the dam with an installation of 102,000 kilowatts operating at a plant factor of 79 percent. The reservoir would contain 420,000 acre-feet of usable storage with an average drawdown of 20 feet. The total estimated cost, at 1949 prices, is $44,500,000.

(*b*) *Hurricane Mountain.*—The Hurricane Mountain project would be located on the Dead River about 6 miles above its junction with the Kennebec River. The drainage area at the site is about 833 square miles. The project would consist of an earth dam 2,300 feet long, including concrete intake and spillway sections, and a 1,200-foot earth dike across a saddle about 2 miles north of the dam. The main dam would be 350 feet high with a cutoff core 100 feet to bedrock. The average head is 291 feet. The maximum water level would be at elevation 1,100 feet and tailwater in the reservoir of The Forks at 805 feet. A powerhouse at the site would have a capacity of 64,000 kilowatts operating at 41 percent plant factor. There would be 308,000 acre-feet of usable storage at the site, with an average drawdown of 11 feet. The total estimated cost of the project, at 1949 prices is $29,500,000.

(*c*) *Flagstaff.*—The Flagstaff Dam and Reservoir on the Dead River is now used for conservation storage for downstream power utilization. The maximum elevation is 1,144 feet and during certain periods the reservoir is emptied. The proposed plan is to use the reservoir for recreational purposes with a maximum drawdown to 1,119, occurring only once in 40 years. This would give usable storage of 260,000 acre-feet, the average annual drawdown being about 9.5 feet. Operation is planned so that drawdown from May to September, inclusive, would not exceed 2½ feet. At some future time consideration might be given to use of the 46 feet of head available down to the reservoir of Hurricane, through construction of a penstock about 2,000 feet long to a powerplant at the upper end of the Hurricane Reservoir.

The projects may be set up in tabular form as follows:

	The Forks	Hurricane Mountain	Total
Headwater elevation (feet)	805	1,100	----------
Average head (feet)	298	291	----------
Capacity (kilowatts)	102,000	64,000	166,000
Average annual energy (kilowatt-hours)	707,000,000	229,000,000	936,000,000
Estimated construction cost (dollars)	44,500,000	29,500,000	74,000,000
Estimated energy cost at site (mills per kilowatt-hour)[1]	3.7	7.5	4.6
Plant factor (percent)	79	41	64
Total storage at site (acre-feet)	908,000	923,000	----------
Usable storage at site (acre-feet)	422,000	308,000	[2] 730,000
Maximum drawdown (feet)[3]	39	21	----------
Average annual drawdown (feet)[4]	20	11	----------

[1] Based on public financing (under private financing these figures would be 6.0, 12.2, and 7.5 mills, respectively).
[2] Occurs not more than once in 40 years.
[3] Average maximum drawdown each year.
[4] Net gain, after allowance for smaller drawdown of Flagstaff Lake, will be 710,000 acre-feet

RECREATION FEATURES

Representatives of the Maine State Park Commission and the National Park Service are in agreement as to the importance to recreation of the features of the Bigelow Mountain region. The establishment of a stable pool at Flagstaff Lake would greatly enhance the general recreational picture and would make the area of statewide significance recreationally. The acquisition of an area in

the Bigelow Mountain region for recreation purposes and the stabilization of the level of Flagstaff Lake will be included in the recreation study and report group program for the Kennebec Basin.

Under the above plan, Flagstaff Lake would be operated, in conjunction with the Hurricane Mountain Reservoir, so that there would be a maximum drawdown of only 2½ feet during the 5-month recreation season of May through September. This would change the operation of the present reservoir, which is lowered to mudflats during each year, and transform it into a useful recreational lake with a 2½-foot drawdown during the summer. The maximum drawdown would be only 10 feet during an average year and 21 feet during the worst water year on record. This type of reservoir and mountain area would support recreation of all kinds, including fishing, hunting, boating, swimming, hiking, mountain climbing, camping, etc. Parts of the region can be classed as wilderness areas.

The necessary regulation of the waters of the Dead River, assuming the recreational operation of Flagstaff, could be carried out in the Hurricane Mountain Reservoir in conjunction with its power operations. Downstream users, now depending on Flagstaff operation for the necessary streamflow, would be assured at all times of at least as good supplies of water as those presently provided.

The operation for recreation at Flagstaff would result in lower heads at Hurricane Mountain with consequent power losses, but these losses would be more than offset by recreational opportunities added. The Hurricane Mountain Reservoir itself would have some recreation use, the maximum drawdown during the May through September period being about 9 feet for the 10-year period studied, the period containing the worst water year on record. The average May through September drawdown would be about 4 feet. The Forks Reservoir would also have possibilities for recreation use, with an annual maximum drawdown during the recreation season of only 9 feet.

FISH AND WILDLIFE FEATURES

Under this plan, Pierce Pond would remain untouched, preserving its excellent Fishing for cold-water fish, and bringing it within the range of new recreational development.

In order to manage the Forks, Hurricane Mountain, and the existing Wyman Reservoir for trout and salmon fishing, it would be necessary to remove natural and artificial barriers from tributary streams, including Chase, Cold, and Moxie Streams which will flow into the Forks Reservoir and Spencer Stream, Enchanted Stream, and Black Brook which will flow into the Hurricane Reservoir. Barriers in these streams would restrict their value as spawning and nursery areas for the reservoirs.

The results of a survey of such obstructions by the Maine Fish and Game Department, together with their recommendations for steps to improve fishing resources in the Kennebec Basin, are attached in appendix A. It will be observed that they advise removal of structures, construction of fishways, or further investigation in most instances. These recommendations are generally concurred in by the U.S. Fish and Wildlife Service. The table is appended for illustrative purposes only.

In certain headwater areas it would be desirable to retain or install small dams or lakes to provide supplemental flows in tributary streams. Dams at Chase, Moxie, Baker, and Enchanted Ponds offer possibilities for such development.

Flagstaff Lake would differ from the proposed reservoirs in that it would offer a splendid opportunity to develop duck and muskrat management areas and would provide fishing for warm-water species such as smallmouth black bass and perch. Inasmuch as even the minimum annual fluctuation of 9 feet would be execessive for maximum waterfowl and muskrat production, the plan would include dikes constructed in and about Flagstaff Lake to provide duck feeding areas. These subimpoundments should be located apart from recreation areas to assure maximum use. Such managed waterfowl areas are highly desirable in Maine.

It must be emphasized that to develop the most desirable fisheries and wildlife management for this area, it would be necessary to survey the quality of tributary streams, remove unwanted dams, and install stream improvement devices wherever needed. Wyman Lake and the newer reservoirs should be surveyed to determine their physical, chemical, and biological qualities in

order to develop the best plan of management. It would be necessary that this entire area be under fish and wildlife management after development.

POWER FEATURES

The power plan visualizes the development of a high load factor installation at the Forks site. Energy of this type is capable of attracting a good-sized abrasives, metallurgical, or chemical industry to the area—industries seeking dependable high load factor energy at low cost. The other projects mentioned, as well as the Indian Pond and Moosehead projects, and any downstream redevelopments, would supply the peak-load energy necessary to the expanded local market and any additional load developing in the region.

The Forks high dam, operating as a system with the upstream projects on the Kennebec and Dead Rivers, would control the necessary storage to regulate the flow of water to the main stem plants below, increasing the firm power output of these plants and eliminating the necessity of annual spring spilling. Payment of benefits for upstream regulation should lower the cost of generation at the Forks and Hurricane Mountain powerplants as shown above by a considerable amount.

The data concerning the condition of existing downstream dams are not yet adequate to permit precise estimates as to the headwater benefits which may be credited to the additional storage which The Forks and Hurricane Mountain projects will provide. A preliminary review of the situation, however, suggests that the addition of 710,000 acre-feet of usable storage may make possible redevelopments adding some 130,000 kilowatts to existing capacity, with an average annual output of approximately 650 million kilowatt-hours of energy. Allowing for the cost of the additional installations, this might result in annual headwater benefits in excess of $650,000. Credited to The Forks and Hurricane Mountain, this would help to bring the cost of energy down to figures which would be attractive to industry.

GENERAL COMMENTS

The comments contained in this memorandum should not be interpreted as in any sense a criticism of the plan proposed by the Corps of Engineers in their preliminary report. Their proposals constitute one alternative which meets the requirements of an inventory of the hydroelectric potentialities of the basin, particularly on the assumption that Maine's power needs will continue to be met by development on a small-increment-at-a-time basis. Our alternative is an attempt to include fuller utilization of the recreation and wildlife resources in a comprehensive program which will also offer a block of power attractive to industrial location and so contribute to more rapid growth of the State's utility load.

The cost figures suggested herein are, of course, tentative and require careful checking. But I believe they will be found to approximate the final figures based on 1949 construction costs.

It is my understanding that another tentative estimate is being prepared for the high-head project at The Forks, which will exceed the estimate used in this memorandum by about 25 percent. Such higher estimate might reflect the assumption of a larger installed capacity or use of a higher contingency factor pending fuller subsurface exploration of the site by core boring. Thus, on the basis of our estimates, a proposed installation of 200,000 kilowatts for operation at 40 percent capacity factor would cost approximately $56 million.

The assumption of a higher contingency factor could not be considered unreasonable in view of the fact that the data presently available indicates a fairly deep glacial valley filled with till. It is our view, however, that provision for a 140-foot cutoff core, coupled with the contingency figures used, is adequate. In any case, even with the installation proposed here, a 25-percent increase in first cost would not render the project uneconomical. Final estimates of the costs of a high dam at The Forks must, of course, await further exploration at the site, scheduled for the coming spring.

The necessary analysis of proposed reservoir operation, based on streamflows during the years 1939 to 1948, inclusive, was prepared in conjunction with the Boston office of the Geological Survey Water Resources Division. This analysis demonstrates the feasibiity of the above multipurpose plan so far as hydrology is a factor.

LELAND OLDS.

APPENDIX A.—*Obstructions surveyed by State of Maine—Kennebec River Basin*

Obstruction No.	Stream	Township	Use	Construction	Operator	Operable	Fishway present	Recommendation
37	Stratton Brook	Eustis	Sawmill	Concrete	A. B. Sargent	Yes	No	Removal of fishway.
38	do	T. 4, R. 3	Logging	Log crib	Dorcourt Co	No	No	Check clogging.
39	North Branch, Dead River	Eustis	Power	Concrete	Stratton Light Co	Yes	No	Further investigation.
40	Jim Pond Brook	T. 1, R. 5	Fish screen	Log crib	Fish and Game Club	No	No	Do.
41	do	T. 1, R. 5	Logging and fish screen.	do	Blaine Viles	Yes	No	Do.
42	North Branch, Dead River	T. 1, R. 5	Logging	do	Hollingsworth & Whitney	No	No	Removal.
43	do	T. 1, R. 5	Fish screen	Hardware, cloth, and timber.	J. Hill and R. Moore	Yes	No	Further investigation.
44	do	T. 2, R. 6	do	Under construction	Megantic Club	(1)		Do.
45	Massachusetts Bog Stream	T. 3, R. 6	Logging	Log crib	Brown Co	No	No	Removal or fishway.
50	Kibby Stream	T. 1, R. 6	do	do	H. & W	Yes	No	Do
51	South Branch, Dead River	T. 2, R. 3	Unknown	do	E. Spaulding	No	No	Removal.
113	Roach River	T.A., R. 13	Logging	do	H. & W	Yes	Yes	Repair fishway.
114	do	T. 1, R. 12	do	do	H. & W	Yes	Yes	None.
115	do	T.A., R. 12	do	do	H. & W	No	No	Removal.
116	Spencer Stream	T. 1, R. 14	do	do	H. & W	No	No	Do.
117	do	East Middlesex Canal Grant.	do	do	Great Northern Paper Co.	No	No	Further investigation.
142	Carry Brook	Seboomook R. 4	do	do	do	No	No	Removal.
143	Socatean Stream	T. 1, R. 3	do	do	do	No	No	Do.
144	do	T. 1, R. 3	do	do	H. & W	No	No	Do.
145	Tomhegan Stream	T. 2, R. 3	do	do	Atlas Plywood	No	No	Do.
146	Moose River	T. 1, R. 1	Water storage	Concrete	H. & W	Yes	Yes	None.
147	Brassua Stream	T. 2, R. 2	Logging	Log crib	H. & W	No	No	Removal.
148	do	do	do	do	H. & W	No	No	Do.
149	Churchill Stream	T. 3, R. 2	do	do	H. & W	No	No	Further investigation.
150	do	do	do	do	H. & W	No	No	Do.
151	Parlin Stream	T. 3, R. 7	do	do	H. & W	No	No	Removal.
152	Upper Churchill Stream	Moose River	do	do	H. & W	No	No	Further investigation.
153	do	do	do	do	H. & W	No	No	Do.
154	do	do	do	do	H. & W	No	No	Do.
155-159	Misery Stream	T. 2, R. 1; T. 2, R. 7.	do	do	H. & W	No	No	Removal.
160	Kennebec River	T. 1, R. 1	Water storage	Concrete	H. & W	Yes	No	Fishway and minimum flow.
161	do	T. 1, R. 7	do	Concrete and log crib	H. & W	Yes	No	Fishway.
162	Pierce Pond Stream	T. 1, R. 4	Logging	Log crib	Central Maine Power Co.	No	No	Keep runaround clear.
163	Baker Pond outlet	Caratunk	do	Timber crib		No	No	Further investigation.
164	Bald Mountain Stream	T. 2, R. 3	do	Log crib	H. & W	No	No	Removal.
165	Enchanted Stream	T. 3, R. 6	do	do	Kennebec Lard Co	Yes	No	Further investigation.
166	do	do	do	do	do	No	No	Removal.

[1] Under construction.

APPENDIX A.—*Obstructions surveyed by State of Maine—Kennebec River Basin*—Continued

Obstruction No.	Stream	Township	Use	Construction	Operator	Operable	Fishway present	Recommendation
167	Lower Spencer Stream	T. 3, R. 5	Logging	Log crib	Central Maine Power Co.	Yes	No	Further investigation.
168	Spencer Stream	T. 4, R. 5	do	do	Coburn Lands Trust	Yes	No	Fishway or open gates.
169	Baker Stream	T. 5, R. 6	do	do	S. D. Warren	No	No	Removal.
170	Spectacle Pond outlet	T. 4, R. 5	Fish screen	Logs and hardware cloth	Forster Manufacturing Co.	Yes	No	Further investigation.
171	Dead River	T. 3, R. 4	Water storage	Log crib	Central Maine Power Co.	Yes	No	Fishway or open gates.
172	Black Brook	T. 2, R. 4	do	Concrete	State of Maine	Yes	No	Fishway.
173	do	do	Logging	Log crib	H. & W	Yes	No	Fishway or removal.
174	Dead River	T. 3, R. 4	Water storage	Concrete	Central Maine Power Co.	Yes	Yes	None.
175	Sandy Stream	T. 2, R. 3	Logging	Timber crib	H. & W	No	No	Removal.

JUNE 10, 1953.

MEMORANDUM

To: Col. G. B. Troland, officer in charge, Boston Coordinating Office, New England-New York Inter-Agency Committee.
From: Department of the Interior representative, New England-New York Inter-Agency Committee.
Subject: Comment on program for St. John River Basin.

The study and report groups of NENYIAC dealing with flood control, conservation storage, and power have recommended the Rankin Rapids project, located just below the confluence of the St. John and Allagash River, to provide 1,460,000 acre-feet of usable storage for stream regulation and 230,000 kilowatts of installed capacity with annual average generation totalling 900 million kilowatt-hours. The estimated cost of this project is $80 million.

The reservoir of this project would flood out the lower sections of both rivers above their point of confluence. Both the St. John and Allagash Rivers have provided a high class of wilderness recreation, centering around well-known canoe trips.

From the point of view of recreation, including fishing and hunting, the stretch of the Allagash which would be inundated is particularly important. This stretch represents the final one-third of a combined recreation resource which includes Moosehead Lake, the upper lakes of the East Branch of the Penobscot, and the upper lakes of the Allagash River itself. Wilderness canoe trips start in the upper Penobscot or Kennebec Basins and finish down the Allagash, affording altogether one of the country's unique outdoor vacation experiences.

The Allagash River, with its flow regulated by the natural lakes, provides an excellent windup of this trip throughout the vacation season. If the Rankin Rapids project is built it will practically eliminate this portion of the recreation resource as a flowing stream.

It is, therefore, recommended that the Big Rapids-Lincoln project, or the Dickey-Lincoln project be substituted for the Rankin Rapids project as a means of developing the conservation storage and power available in this portion of the St. John Basin without flooding out the Allagash River. Selection of one of these alternatives would be consistent with a recommendation by the recreation and fish and wildlife study and report groups of a wilderness water routes project to include certain lakes and streams in the upper Kennebec, Penobscot, and St. John Basins.

The recommended projects are described below. In the estimated costs of the alternative stream regulation and power projects 20 percent is added for contingencies instead of the more conservative 35 percent used by the Corps of Engineers. This must be taken into account in comparing these figures with the $80 million estimated cost of the Rankin Rapids project.

WILDERNESS WATER ROUTES PROJECT

The wilderness water routes project would consist of the preservation, with minor improvements, of the finest combination lake and river canoe trips in the eastern United States. It would involve particularly reserving the entire stretch of the allagash River from its headwater lakes to approximately its confluence with the St. John River as a free-flowing stream in an unspoiled wilderness setting to provide the final portion of these trips.

Five routes.—Greenville, Maine, and other points along the shores of Moosehead Lake, provide the starting points for a number of these combinations water routes which traverse portions of the upper Kennebec, Penobscot, and St. John River Basins. All routes traverse the entire length of the lake, which offers picturesque shoreline and fine fishing.

From the northern limit of this lake the traveler has a choice of five routes, namely the Penobscot, West Branch; the Penobscot, East Branch; the Aroostook; the St. John; and the Allagash. Each of the routes offers scenic attractions and good fishing. The hand of man has altered many of the natural features through lumbering operations, construction of dams, roads, and other structures. Pollution has also affected certain stretches of the rivers. Of the five routes, the St. John and the Allagash still retain much of their wilderness conditions.

From the upper end of Moosehead Lake, canoes are transported 2 miles overland from northeast carry to the West Branch of the Penobscot below Seboomook, through a series of rapids and deadwaters, including Moosehorn Deadwater, Fox

Hole, Rocky Rips, and Pine Stream, to Chesuncook Lake. At this point the Allagash route diverges from those following the East and West Branches of the Penobscot and the Aroostook.

Allagash route.—Following a northerly course from Chesuncook Lake, the route traverses a series of lakes, connecting streams and portages, including Umbazooksus, Chamberlain, Eagle, and Churchill Lakes, to the Allagash River. From this point, the route follows down the Allagash over a series of rapids for approximately 10 miles, thence to Umsaskis and Long Lakes, each of which are approximately 5 miles in length. From the latter lake, the route continues down the river for approximately 10 miles to Round Pond. From the outlet of Round Pond, the Allagash River is followed for approximately 30 miles to its confluence with the St. John River. Throughout the last 30 miles picturesque rapids and falls are encountered which require short portages. Allagash Falls is perhaps the outstanding feature in this stretch of river.

This route provides a lake and river trip which is unique for variety of scenic attractions, excellent fishing in lakes, river and incoming brooks, and for ease of travel. It can be made in approximately 10 days under favorable conditions. Most explorers take from 2 to 4 weeks and include many interesting side trips on the tributary streams.

In descending the West Branch of the Penobscot River from northeast carry, brook trout and salmon fishing of good quality are found. Chesuncook Lake supports abundant brook trout and the finest quality of lake trout are found in all the larger lakes. Brook trout abound in the river and tributary streams.

St. John route.—This second outstanding route extends from St. John Pond, 105 miles down the St. John River to Dickey, Maine, just above the confluence with the Allagash River. Explorers taking this trip have a choice of starting points. They may proceed up Moosehead Lake from Greenville, following the same route as those who take the Allagash trip up Moosehead Lake but proceeding to northwest instead of northeast carry. From there the route proceeds up Seboomook Lake in the West Branch of the Penobscot, followed by a series of difficult carries and Penobscot headwaters to the headwaters of the St. John. The alternative is to proceed by road to St. John Pond and put the canoe into the water at that point.

The St. John and Allagash trips may also be combined by following the upper St. John route 54 miles down the river to Nine-mile Bridge, thence by road to Umsaskis Lake in the Allagash River system, and finally 51 miles down the Allagash. In case either the Big Rapids-Lincoln or the Dickey-Lincoln alternatives to the Rankin Rapids project are included in the plan, this combination route would preserve the upper St. John as well as the Allagash canoe trips, enabling explorers to experience pioneer adventure in the wildest part of Maine, where game is plentiful and fishing is excellent. Preservation of the lower Allagash River as a free-flowing stream is essential to the combination route.

Allagash fishing.—Brook trout and lake trout fishing of the very finest quality is to be had in Allagash waters. Favorite sites for angling are at the foot of falls and rapids, at the mouths of inflowing tributaries, below dams, and just above or below lakes through which the river passes.

All the waters of the area are clean, clear, and attractive. Seasonably high stream temperatures may periodically exist, but incoming cooler streams and deep, shaded pools provide refuge from possible excessive temperatures.

The maze of tributaries to the Allagash and the other streams is the key to the productivity of the area. The small streams provide spawning sites and nursery areas for the cold water fishery. The larger lakes provide a haven where it is possible for the trout to attain a larger size than in the stream where trout are more available to the angler.

Presently the Allagash is unspoiled by many dams, pollution, and competition by unwanted fish species. These three detrimental factors plague all the areas to the southward to a greater or lesser degree.

ALTERNATIVE CONSERVATION STORAGE AND POWER PROJECTS

Construction of the Rankin Rapids Reservoir and power project would flood 72 percent of all the free-flowing mileage of the Allagash River, thus materially reducing the value of the wilderness water routes project described above. The recommended alternatives, which would provide large conservation storage and power development, while preserving the Allagash Basin as a wilderness area, are briefly described below:

Big Rapids-Lincoln project.—This project would consist of an earth-filled dam 3,200 feet long and 270 feet high, with a concrete spillway, located on the St. John River at Big Rapids about 3 miles above the town of Dickey and 2½ miles above the mouth of the Little Black River; an earth-filled dam 1,800 feet long and 110 feet high, with a concrete spillway at Lincoln School on the St. John River about 2 miles above the mouth of the St. Francis River and 2½ miles below the Rankin Rapids site; a powerhouse at Big Rapids Dam containing three 50,000-kilowatt units operating under a gross head of 230 feet and with annual generation of 575 million kilowatt-hours; and a powerplant at the Lincoln Dam consisting of three 37,000-kilowatt units operating under a head of 95 feet with annual generation of 383 million kilowatt-hours. With the maximum elevation of the Big Rapids Reservoir at 860 feet and a 50-foot drawdown the usable storage would be 984,000 acre-feet. The Lincoln Reservoir, with maximum elevation of 630 feet and a 10-foot drawdown, would provide about 54,000 acre-feet additional usable storage.

The estimated cost of the Big Rapids-Lincoln project, including the two powerhouses with a combined capacity of 261,000 kilowatts and an annual generation of about 958 million kilowatt-hours, would be $70 million. Under public financing, and with no allocation of storage costs to downstream benefits, the cost per kilowatt-hour at the site would be about 3.6 mills. If an appropriate allocation is made to downstream benefits, based on an equivalent single-purpose storage project costing approximately $21,600,000, the cost per kilowatt-hour of project power would be about 3.1 mills.

Dickey Lincoln project.—If larger storage is considered desirable an alternative project would consist of an earth-filled dam 4,900 feet long and 290 feet high at Dickey on the St. John River about 3 miles above the mouth of the Allagash River; an earth-filled dam 3,300 feet long and 240 feet high with a concrete spillway on Falls Brook about 1 mile above its mouth; an earth-filled dam 1,800 feet long and 110 feet high with a concrete spillway at Lincoln School on the St. John River about 2 miles above the mouth of the St. Francis River and 2½ miles below the Rankin Rapids site; a tunnel 35 feet in diameter and 7,600 feet long from the Falls Brook Reservoir to the Lincoln Dam with penstocks to a powerplant at the foot of the dam; a powerplant containing four 60,000-kilowatt units operating under a head of 325 feet, and two 25,000-kilowatt units operating under a head of 95 feet, with an average annual generation of 990 million kilowatt-hours. With the maximum elevation of 860 feet in the Dickey-Falls Brook Reservoir and with 50 feet of drawdown the usable storage would be 1,980,000 acre-feet. At elevation 630 feet and 10-foot drawdown the Lincoln project would provide about 36,000 acre-feet of usable storage.

The estimated cost of the project would be $93 million and, under public financing without allocation to downstream benefits, the average cost per kilowatt-hour at the site would be about 4.7 mills. With appropriate allocation to downstream benefits, based on an equivalent single-purpose storage project costing approximately $32 million, the cost per kilowatt-hour at the site would fall to 3.9 mills.

Two-stage development possible.—Either the Big Rapids-Lincoln project or the Dickey-Lincoln project could be developed in two stages, deferring the dam at Lincoln until a later date. Under such a plan, the Big Rapids or Dickey projects, as single developments would be found to be feasible, under the above-described conditions.

GENERAL COMMENTS

The investigation of possible alternatives to the proposed Rankin Rapids Reservoir and power project was undertaken in the belief that the series of natural attractions offered by unique wilderness routes, of which the Allagash River is an essential part, should be set aside for wilderness fishermen, canoeists, hunters, campers, and nature explorers to roam in with at least the healing illusion of freedom from civilized intrusions. As civilization advances more and more persons are seeking this type of recreation in a wilderness setting. Settings of this type are disappearing at an alarming rate and every effort should be made to retain the natural condition of the Allagash River with its indigenous flora and fauna, its rock formations, and clear pure water. This river is one of the few remaining rivers in the New England-New York region and the United States that approaches an unspoiled wilderness setting, free of roads, free of commercial and private developments, free of pollution,

and other artificial alterations. Neither of the alternatives proposed above would mar this condition by artificial impoundment.

It is estimated that approximately 1,500 persons made either the Allagash or the St. John canoe trips in 1952. With the general increase in the numbers coming to Maine for outdoor vacations and the growing numbers desiring respite from the pressures of our urban civilization, it is anticipated that these wilderness routes will offer adventure to many more people each year without sacrificing their essential character.

LELAND OLDS.

Senator MUSKIE. Our next witness is a representative of the Maine Fish and Game Association. I think it is appropriate that a spokesman of that group of citizens is to be here this afternoon.

He is Charles A. Pierce.

STATEMENT OF CHARLES A. PIERCE, MAINE FISH & GAME ASSOCIATION

Mr. PIERCE. Mr. Chairman and members of the committee, Governor Clauson, my name is Charles Pierce and I represent the Maine Fish & Game Association which wants to thank you for this opportunity to place on record our views relative to the State's water resources.

Maine was in a wonderful position—resourcewise. It was man who raised havoc with our waters, forests, soils, fish, and game. We have started to make some progress from conservation viewpoint in all areas except that of water. One of our recent commissioners of sea and shore fisheries stated that Maine is the most polluted area in the United States north of Norfolk, Va.

The legalistic development of water rights in Maine sheds some light on our present predicament. Our historical ties with the Commonwealth of Massachusetts explain why our laws parallel those of our sister State.

Maine courts have repeatedly held that the colonial ordinance of 1641–47 is a part of our common law. By this ordinance the general court of Massachusetts enacted that ponds having an area of more than 10 acres were reserved to the public and reserved to the people the right to fish and fowl on the waters of great ponds.

The CHAIRMAN. Was the preposition "on" in that last phrase appropriately there?

Mr. PIERCE. Yes.

The CHAIRMAN. All right.

Mr. PIERCE. In 1647 the ordinance was amended to provide for public access to great ponds by authorizing persons to "pass and repass on foot through any man's property for that end, so they trespass not upon any man's corn or meadows."

An opinion of the Supreme Judicial Court of Maine in response to questions put to it by the legislature is found in 108 Maine at page 503. It deals at length with the interpretation and expansion of colonial ordinances in this State. We find that the State holds great ponds in trust for the use of the people of the State, together with the right to control and regulate the waters thereof; the individual has the right to fish and fowl in these waters so long as he does not trespass upon the cultivated land of littoral proprietors, the right of boating, cutting ice, and the supplying of water for domestic uses

are some of the public purposes recognized as within the regulation and control of the State. Because the people have these rights, the legislature, and only the legislature, may abridge them by grant to private individuals or corporations. So much for great ponds.

The Mill Act passed in 1821 followed the Massachusetts law verbatim. Unrestricted industrial pollution was permitted at that time and has been reenacted down to the present time.

However, recently public opinion has forced the enactment of some pollution control legislation. In this State we find that we have a powerful industrial lobby, powerful far beyond its proportional economic position in Maine. It was this industrial lobby which wrote our water classification law. Briefly, the system provides that the water improvement commission, after research and hearing, may recommend to the legislature certain quality controls on a given water.

If the commission recommendations are approved, then we have enforcible law, enforcible if and when any appropriation is provided. Experience has shown that this system is subject to easy manipulation. Towns aggrieved at specific local controls recommended by the commission, gang up on the entire classification bill each session. Conservationists are so occupied in working for the passage of the classification bill, that they find that their strength has been dissipated for efforts in promoting stronger pollution laws.

In the last session of the Maine Legislature, this association worked for the enactment of a 10-year cleanup program. Opposition lobbyists sold the idea that it was a crash program and we lost out.

The CHAIRMAN. Why hurry?

Mr. PIERCE. Beg pardon?

The CHAIRMAN. You had a 10-year program.

Mr. PIERCE. Yes.

The CHAIRMAN. I say why hurry.

Mr. PIERCE. We have been accused in the past of having no regard for our industrial interests and we felt that 10-year program that we mapped out and recommended was fair to all interests concerned but it was characterized as a crash program and we never had the opportunity.

The CHAIRMAN. I was trying to evidence some agreement with your position.

Senator HART. I think the chairman was suggesting that whoever regarded that as a crash program might be eligible to be put in charge of America's space program.

Mr. PIERCE. In prior session we had the same success in promoting a modified version of the Pennsylvania Clean Waters Act.

The pollution is our main problem in connection with water resources, and it will remain so until such time as we are willing to make a radical departure from our basic philosophy and laws. We must recognize that, with the exception of our forest industries, Maine is not, and never will be, heavily industrialized as we think of Massachusetts, New York, Pennsylvania, Michigan, and others. Our economic future rather lies in the harmonization of our agriculture, commerce, manufacturing and recreational business with our natural resources. We must grasp the significance of the rapidly expanding suburbia which is engulfing us. It would seem that we have no alter-

native but to adopt a multiple-use theory in the regulation of our water resources.

Our failure to follow it in the past has deprived us of untold wealth from not only our recreational businesses, but also from commercial fisheries, including clams.

We suggest that Congress could strengthen the hand of water conservationists a great deal. In Maine we have been historically allergic to Federal assistance of any kind. We failed to join an interstate compact on water resources proposed in the last legislative session, due again to the influence of the industrial lobby. Still, we lack the initiative and imagination to help ourselves.

Again, on behalf of the Maine Fish and Game Association, I wish to thank you for your attention to Maine's particular problems in water resources. We hope your studies will result in the enunciation and furtherance of policies which recognize the importance of our waters.

The CHAIRMAN. Thank you very much for a very interesting and constructive statement.

Senator MUSKIE. Thank you, Charlie.

The next witness on the list is Mrs. John F. Freeman, of the League of Women Voters in Maine, and we are happy to welcome her this afternoon.

STATEMENT OF MRS. JOHN F. FREEMAN, LEAGUE OF WOMEN VOTERS IN THE STATE OF MAINE

Mrs. FREEMAN. Mr. Chairman, Senator Muskie, Governor Clauson, and members of the committee. The study of conservation problems by the League of Women Voters of the United States has been addressed in the last 2 years to the problems of water resource development.

We have concerned ourselves with three areas: the need for increased coordination of policies and programs within the Federal Government; the problems of providing equitable financing for water development projects; and the encouragement of the concept of regional or river basin planning. So urgent have our own water resource problems appeared that the League of Women Voters of Maine is now studying and preparing to act upon measures to strengthen our water improvement commission and to support other agencies coordinating water resource problems. We wish to emphasize that league members are informed laymen, not technicians. While this study has gone deeply into water problems in the Nation, our recommendations are in the form of general principles which we would like to see incorporated into legislation.

Though the State's water development problems lend themselves to particular analysis, it is correct to say that answers to them depend on a revision of Maine's traditional concepts of water use and water management. Formerly we depended upon textiles and wood products for our economic base; we are now planning the expansion of inland and coastal recreational facilities and the utilization of surplus labor in new, stable, and diversified industries.

The NENYIAC report, authorized by the Flood Control Act of 1950, and providing the first basic, comprehensive study of New England land and water resources, suggests a range of development which

challenges many of Maine's historic views of its rivers as being primarily sources of power and carriers of waste.

This report, which will be cited in more detail elsewhere, emphasizes not only extensive pollution control measures, amounting in this subregion to nearly $41 million in first costs, but also development of more than 40 hydroelectric and storage projects, extensive fish and wildlife development, recreation installations and land management programs. The lack of basic data on water supply and mineral resources is cited, and the lack of information on human resources is apparent.

The limitations of the report, as noted by participating Federal agencies and State officers, bear heavily on problems of Federal coordination and financing. We observe here the disagreement over computation of benefit-cost ratios, as cited by the Departments of the Interior; Health, Education, and Welfare; and Agriculture; the absence of alternate basin plans which would have provided more balanced development of power, recreation and fish and wildlife development; and the imbalance of survey funds among Federal agencies which made the Agriculture Department report, in particular, inadequate.

Water development in Maine has most recently been concentrated on pollution control and recreation development, the latter including a comprehensive State plan for purchase of land and construction of sites. Pollution control remains the most immediate problem; the tributaries of major rivers have been classified but the main streams have not.

Formerly industrial pollution was Maine's worst problem; since the construction of treatment plants and/or process changeovers along the Androscoggin, Kennebec and Penobscot Rivers, municipal sewage looms soon to be the worst offender.

While the water improvement commission reports more progress in 1958 in the treatment of polluted water than in any other year, 37 percent of State and Federal funds available for the job went unused, partly because of the expense to communities of initial surveys and studies.

Closely allied to the problem of pollution control, though less apparently pressing, is the drain upon water supply. In industrial areas, such as Lewiston and Auburn on the Androscoggin, it is recognized that the success of State and city industrial development programs will mean looking for new sources of water.

In agricultural regions, supplemental irrigation, once a rarity, is increasingly employed. Moreover, increases expected in Maine's population in the coming years will mean more intensive agriculture and correspondingly more use of irrigation. There are no flood control projects, as such, in Maine; privately owned storage dams provide a measure of protection.

There is, however, a good possibility that increased land management programs might control water which does constitute at least nuisance conditions after heavy rains or spring runoff.

Attempts at coordinated development of Maine's eight major basins, three of which are interstate, two of which are international, have included the interstate pollution control compact, and the work of the Northeastern Resource Committee, an informal planning committee

comprised of delegates from each of the agencies and New England States involved in the NENYIAC study.

Within the State, a State interagency committee is in operation, and in the place of the proposed northeastern water and related land resources compact, which was rejected in committee last year, a study commission has been proposed.

The public administration service survey recommended consolidation of Maine's 10 or more natural resource agencies into a single department, a step which has been taken with great success in larger States, but which has met with little support in Maine either from agency heads or legislators.

While the proposed study committee, consisting of agency representatives and private persons, delegated to provide procedures for program coordination and to study the development of Maine's resources, might provide necessary data, it hardly deals with the problems of interstate rivers or the necessity for working with existing Federal policy in our river basins.

Although Maine is not yet a member of the northeastern water and related land resources compact, the Maine League of Women Voters does support the compact. We believe that such machinery is needed to handle problems which, like our rivers, do not observe political boundaries. We feel that this compact, providing as it does for coordinated planning, rather than operations, and for coequality of the State and Federal representatives in voting, admirably suits the needs of New England States.

We would like to see the Federal Government establish a water resources policy which will view the problems of Eastern States such as Maine as part of a national water policy program. To provide such a policy we specifically recommend the following:

In regard to Federal coordination, we urge that—

1. Better organization of the executive branch be considered to provide greater coordination in overall planning of water development;

2. Efforts be made to eliminate, as far as possible, inconsistencies and conflicts in basic policies among Federal agencies;

3. Executive and congressional procedures be devised which could offer alternative choices before plans are formalized.

As an illustration of legislation which advances such suggestions, we cite S. 2549, the Conservation Act of 1960, which provides for a permanent executive committee to assist the President in compiling an annual comprehensive resources report, and a joint legislative committee to study such a report and plan the coordination of programs at all levels.

We commend also the select committee proceedings, which bring together formally members of four Senate committees in public hearings. Together, these offer innovations we heartily support: public reporting of water needs; legislative-executive liaison; a permanent study and planning group; and explicit statement of Federal responsibility in natural resource planning; a program for development which utilizes the resources of all levels of government and of private persons; a commitment to coordination of natural resource activity to meet human needs; a recognition of the value of comprehensive resource planning.

In regard to coordination and planning at the regional level, we urge that—

1. Regional machinery be provided for systematic and effective cooperation of Federal-State-local and private interests in water development, the form of which would vary to meet the needs of the region;

2. Procedures be developed which offer alternative choices in the early stages of planning:

3. The results of regional development meet not only the needs of the region, but also be desirable for the country as a whole.

We cite again our support of the northeastern water and related land resources compact.

In regard to equitable financing, we urge that—

1. Uniform standards for project evaluation and for repayment be considered;

2. State and local and private users be urged to assume their share of the costs of water development in relation to the benefits;

3. The amount of Federal contribution be determined in the light of the national interest involved.

We note here as typical of what we consider sound water development financing the Blatnik amendment to the Federal Water Pollution Control Act, which increases the amount available to States for pollution control disbursement to communities, while retaining the fixed proportion of 30 percent Federal aid to 70 percent State and local funds.

This bill provides for uniform cost-sharing, at the same time using Federal funds as an incentive to the use of State and local money.

We support also S. 2060, the Uniform Cost Sharing Act for Flood Control, which provides that local interests will pay at least 30 percent of the first costs of flood control projects.

We again commend the select committee hearings, which have already done much to stimulate public interest in water resource planning.

Thank you.

(Additional information follows:)

A VOTER'S VIEW FROM THE BRIDGE—THE ANDROSCOGGIN RIVER BASIN

Compiled by a committee of the League of Women Voters of Lewiston, Maine

A word in advance.—If you're wondering why a study of one river basin, we quote from a text on the material, "Ten Rivers in America's Future," the river basins "provide practical examples of the problems for which a national water policy must furnish workable answers." Note here the conflicts of interest, the faltering lines of responsibility, the payment inequities and you will see in miniature many of our national problems.

I. The Characteristics of the Basin

A. A bird's-eye view

The Androscoggin is the third largest interstate river in the New England drainage basin. It rises in Maine near the New Hampshire, Canadian, and Maine boundaries; it is 174 miles, with one-fifth of it in northern New Hampshire, four-fifths in Maine, a total of 3,470 square miles of watershed. There is no coastal area and the largest of many tributaries is the Little Androscoggin and the Magalloway River. Flying from the upper regions you see mountains and

forests; the land is in the central region rough and irregular, and the lower part of the subbasin is low and rolling. About 85 percent of the subbasin is forested, with only about 7 percent in the lower valley in cropland. According to local soil conservation agents, there is no serious erosion, a situation problem helped by the forestation program here.

The large number of lakes in the subbasin region total more than 4 percent of the entire area. Ground water supplies for individual rural homes and farms, exclusive of irrigation which is little practiced, are adequate. This water is suitable for domestic and most industrial uses but it is harder and more mineralized than surface waters, and found only after boring through layers of bedrock. (The NENYIAC report proposes a program to investigate the quantity and quality of usable ground water, to cost about $68,000.) The rainfall varies from 33 to 40 inches providing sufficient water for farm products.

B. THE POPULATION AND ECONOMIC CHARACTERISTICS

The last century has seen a 40-percent increase in Maine population; the estimated 1950 population was about 155,000. In the lower subbasin, Lewiston, Maine, is the largest city, with a 1950 population of 41,142. Berlin, N.H., is the largest city in that portion of the subbasin, with a 1950 population of 22,000. Four cities, Rumford, Auburn, Lewiston, and Berlin, N.H., account for nearly 70 percent of the total population. This density is located in the lower part of the basin and population increases will center here.

Farming, manufacturing, lumbering, are all important Maine industries. The largest source of farm income is from the sale of dairy and poultry products. The manufacturing of lumber and lumber products, leather, food, textiles, and pulp and paper are basic to the economy of the lower region of the basin; any efforts at stream pollution control, conservation, recreational development, must deal with this fact. Lumbering does not compete financially but it is still important; private interests in this immediate locale feel it is not sufficiently exploited as an industry. Recreational use of the water is small; the two largest areas are the Rangeley area and Poland Springs, but additional exploitation of recreational water use is limited by pollution and regulation for power development.

There is apparently little local interest in river development, except at the most immediate sources. A few conservation groups: the Maine Federation of Garden Clubs and the Federation of Women's Clubs have evidenced interest in conservation, as have occasional fish and game clubs. There are no local water users associations as in some States, largely because there is little irrigation, scarcity of water, or dam building in populated areas. At a conference held in June 1958 at Colby College, 600 persons appeared to discuss water resource problems for the entire State. This is a hopeful beginning, but more public education is needed.

II. The Water Use and Control Programs in the Basin

A. WATER SUPPLY

Both Lewiston and Auburn obtain water from Lake Auburn, a State-owned "great pond." Lewiston maintains a water department as part of its city government, with an appointed water commissioner responsible to the mayor and city council. Capital improvements to city water supplies—mains, connections—are paid for out of public moneys, into which revenues from water payments are placed. Lewiston owns and maintains all of the connections in the city and in Auburn which connect with Lake Auburn and supply Lewiston.

Auburn, on the other hand, obtains water from Lake Auburn through the Auburn Water District, a quasi-municipal corporation which owns and operates the pumping station and all connections supplying water to Auburn. Revenues from water go to the water district, not to the municipality, and the water district is responsible to its directors, the public conscience, and to the public utilities commission.

Rates in both cases are set to provide a fair income over the cost of operation, which in both cases includes staff, connections, mains, and in the case of the water district, certain patrol duties voluntarily assumed by it around Lake Auburn. (Auburn bought some property surrounding the lake.) In both cases, the PUC approves projected rates, since its concern is the fairness of charges for public utilities, regardless of whether these utilities are publicly or privately provided.

One important administrative distinction between the two systems is that in considering capital improvements to its water system, Lewiston must consider its debt limit. The Auburn Water District, on the other hand, is separate from the city, and has no obligation to consider Auburn's debt limit, but rather only what it can afford as a corporation. Conversely, Auburn need not consider the water district's needs in computing its city costs, though Lewiston must consider the water needs of Lewiston in its municipal budget. It should be clearly understood that Lewiston does not buy water from Auburn, as is commonly believed; Auburn does not own the water nor does it have jurisdiction over the water district, which does not own water either. Both pay for their facilities, though through different administrative systems.

B. POLLUTION ABATEMENT

The state sanitary water board was established in 1941 to regulate and control pollution in State waters. It was initially provided with insufficient funds to carry out its studies, but in 1945 a modest appropriation was made for the purpose. (Conditions on the Androscoggin prompted the additional money.) Before the establishment of the water improvement commission, the public utilities commission was responsible for pollution control. At this time, 1944, the following rivers were exempted from these regulations: Penobscot, the Kennebec, the Androscoggin, and the Saco. This still obtains. In 1950 the 80th Congress passed Public Law 845, allocating funds to the State department of health and welfare as the pollution control agency of the State. The duties of this agency were to survey the water pollution problems in the State, prepare a comprehensive program for the elimination or reduction of such pollution, as part of a comprehensive program for interstate pollution abatement. In 1954 the State set up the water improvement commission, whose composition and function are cited below. This agency is the most active, though not the most powerful of all State water resource agencies.

The commission consists of the commissioner of health and welfare and eight members appointed by the Governor and council, two of whom shall represent manufacturing interests, two municipalities, two the general public, and two the conservation interests. Appointments are for a term of 3 years, with at least two meetings a year. The major duties are: Surveys, including all surveys pertinent to pollution control and surface water classification; licensing of waste discharges when applicable; enforcement of licensing and classification provisions (this is the thorniest obligation); consultation with municipalities and industries on sewerage and waste disposal problems; research on waste-disposal problems; administration of Federal funds allocated to Maine for State assistance and for aid to municipalities wishing to build treatment plants. The commission may make recommendations to the legislature for classification procedures, a process subject to many compromises.

Regarding classified water, the water improvement commission can prevent anyone from disposing of any refuse into water which would lower its classification. Appeal is possible.

Regarding unclassified water, no group other than municipalities whose facilities existed before September 1, 1959, can discharge any refuse which would lower the projected classification upon which the commission has decided.

Regarding both classified and unclassified water, none other than industries existing before August 1953 can discharge any new sources of pollution without first obtaining a license.

A brief summary of the classifications are as follows:

These, incidentally, were the existing conditions of the streams, not, as the commission requested of the legislature, the desired classifications to which communities would have to raise their streams.

Class A can be used for bathing and for public water supplies after disinfectation. There shall be no discharge of sewage or other wastes and no such deposits on the banks. The Magalloway and Kennebago Stream are class A.

Class B1 can be used recreationally after treatment, with variations on oxygen content. No disposal of sewage or industrial waste permitted. The waters lying above the upstream crossing of the Maine-New Hampshire boundary and wholly within the State of Maine are B1, as are parts of the Little Androscoggin not otherwise specified.

Class B2 shall be acceptable for recreational boating, fishing, industrial uses after treatment. No disposal permitted. Keith Brook, Alder River, Ellis River, Andrews Brook, parts of the Little Androscoggin are B2.

Class C is satisfactory for recreational uses, but not swimming, after treatment. Such streams may be closed if temperature or streamflow alters. Parts of the Little Androscoggin, Webb River, Austin Brook are class C.

Class D is devoted to transportation of sewage and wastes without the creation of a nuisance condition. The Little Androscoggin, main stem, from South Paris to outlet of Thompshon Lake, Oxford, is class D.

Maine is a signatory to the Interstate Pollution Control Compact Commission, as are the other New England States and New York. This group pledges to provide for pollution abatement and for control of future pollution in interstate inland and tidal waters. This group classifies water for its highest use based on water quality standards it has adopted. This does not conflict with intrastate classification. New Hampshire has already classified a large number of its streams in the Androscoggin Basin.

The actual pollution situation varies. In Maine, the sewage of a population of 87,000 is discharged untreated into the river. In the town of Rangeley, the sewage from a population of 570 is discharged into Rangeley Lake. From Umbagog Lake the river flows through the villages of Errol, Milan, Berlin, and Gorham in New Hampshire and carries a considerable pollution load before it reaches Maine. The sewage from 1,450 population in Bethel and 12,710 in Rumford is untreated, and between Rumford and Lewiston, 20,775 population discharge untreated sewage. In Auburn and Lewiston, this increases to 50,000, downstream, 16,000 more people add to this. Upstream in New Hampshire, pollution from pulp and paper mills, equivalent to a population of 1½ million reaches the river. At Lewiston and Auburn wastes from textile mills and packing companies equal that of 30,000 people. At Lisbon Falls a woolen textile mill further adds to this load, as does a Brunswick textile mill. Waste from sawmills on the Little Androscoggin in Bethel and Mexico also go into the river. The tributaries are in equally bad condition; the Little Androscoggin is highly polluted from South Paris to Auburn, so much so that odors are occasionally a public nuisance. South Paris has a sewage treatment plant for certain of its mains, but not all, and the river directly receives wastes from canning plants, a tannery, a paperboard mill and others. Some of the smaller tributaries—Swift, Webb, Nezinscot, and Sabattus Rivers—are polluted near their junction with the Androscoggin, particularly the Sabattus. However, most of the industry is situated on the Androscoggin and Little Androscoggin Rivers.

Industry is moving lately to correct its waste disposal problem. The Brown Co. in particular put into operation in 1958 a chemical recovery plant, which burns the greater part of the waste sulfite liquors from their Burgess pulp-mill, converting it to fuel. This changeover to the so-called kraft process cost $5½ million, on which it will eventually break even. Other mills, Oxford for one, are using a similar process. By December 1959, noticeable differences will be found in the river. In the meantime, Dr. Walter Lawrance, of Bates College, is the court-appointed referee to determine the amount of pollution load the river will carry before a nuisance condition prevails, and to so inform the mills that they may alter their production schedules. By 1961 the cities, not the industries will be the worst polluters. It is apparent that industry must find a way to utilize their waste profitably; this is one function of WIC research. Amortization of taxes by the Federal Government for building plants may encourage industrial building apropos Lewiston's sewage disposal problems. George Mahar of the public works department predicts that it will be 1961 before the river is ready for classification. He notes that a severe difficulty in Lewiston is not only building the plant, but getting waste matter to the plant since present mains are not constructed for this. A plant would cost a minimum of $3 million and there is strong feeling, Mahar thinks, that if we wait long enough the Federal Government will do the job free. This suggests a needed reanalysis of local contributions to such projects, to say nothing of what "free" means in a taxing system.

The NENYIAC report of 1957 proposes three forms of treatment plants, totaling $7,600,000. The first would be 10 municipal sewage disposal facilities, private sewage systems for 9 factories, 3 factories and 2 hotels, and industrial waste disposal facilities for 22 plants. The first would cost about $4,200,000; the second, $151,000; the last, $3,253,000. Under provisions of Public Law 660, Federal aid is available to State agencies for pollution-control activities. This

grant is based partly on relative population and partly on relation of State per capita income to Federal, and provides about $57 of Federal money available to Maine for every $43 the State spends up to a maximum of $25,000. Maine's annual pollution abatement appropriation is about $100,000. This money is fully nonreimbursable, with each agency providing what it has in the way of money and skill. Under the same law, Maine can receive about $650,000 in Federal money to be given to cities wishing to build treatment plants. In this arrangement, the Federal Government will pay up to 30 percent of the total cost, or $250,000, whichever is less, and the State will pay 20 percent of the total cost, fully nonreimbursable at the local level. A proposal made by Representative Blatnik, Democrat, of Minnesota, would increase this initial amount to $500,000. A conflicting proposal by Representative Reed, Republican, of New York, would abandon the Federal aid return pollution control and financing to the States. This latter bill has Presidential support.

The conflicts of interest in regard to using the streams as waste carriers have become rigidified over the years. The public takes a lukewarm interest in clean water, depending on whether they think polluters are shirking their duties or not, and private group interest ranges from that of conservationists, who would have most streams in a condition, to that of industrialists who feel they cannot afford this kind of public gesture. Both tend to oppose Government intervention at any level. Municipal officials recognize the need for steps toward good sanitation, but elected officials are reluctant to spend money on construction buried in the ground, or on treatment plants which would not constitute a point-with-pride project. The WIC feels strongly that municipalities must look toward their sewerage facilities, with treatment plants planned for the future. It is significant that much State money for this purpose has found no takers. From this we can deduce that grassroots education on the need for pollution control is badly needed. The WIC, because it is limited in staff and funds, can do none of this work, and must depend on voluntary agencies.

C. FLOOD CONTROL AND IRRIGATION

Since 1936 there has been no serious flood control problem in the basin. A measure of control is provided by the upstream storage dams. Irrigation is used to only a minor degree, nor is the amount likely to increase. River water can be used on some, but not all, farm products.

D. POWER DEVELOPMENT

The power development in the basin is somewhat complex, but becomes less so if these distinctions are made. First, all power development on this river is privately owned; there is no Federal or State ownership of dam sites. Second, because there is little flood problem in the basin, there are no flood control projects other than these power dams, which by definition store water and receive overflow. Third, hydropower refers to any kind of waterpower, of which hydroelectric power is one kind. Others are steam, generating, i.e., water turning wheels or operating turbines.

According to the NENYIAC report, there are six hydrodevelopments on the river in New Hampshire and 16 hydroplants in Maine, which includes the Lewiston plants which count as one. Although our information conflicts, we believe that of these, seven are hydroelectric plants. The principal power developments are situated in the Berlin-Gorham area, where the Public Service Co. of New Hampshire has hydroelectric developments; at Rumford, Maine, at Livermore Falls, and at Lewiston. There are several smaller developments between Lewiston and Brunswick, but most of these developments are in the upper reaches of the river. The NENYIAC report recommends the expansion and building of seven electric projects providing 92,500-kilowatts of capacity at Aziscohos, Maine, Errol, N.H., Mollidgewock, N.H., Pontook, N.H., Pulsifer Rips, N.H.; Gilead, Maine; and Dixfield, Maine. Of these, only one project is underway, that at Errol, N.H., where a new high dam of 55 feet replacing the present dam has been licensed by the FPC, Washington. This will be built by the N.H. Water Resources Commission. It will be financed by a public corporation issuing bonds to be amortized by payments from the water users on the river. The Central Maine Power Co. operates the hydroelectric plants and owns the Union Water Power Co., which sells water locally for waterpower. The Androscoggin Reservoir Co., owned by the Rumford Power Co., International Brown, and UWP, owns the Aziscohos Dam.

The obligations of the utilities beyond providing waterpower in some form or water are that they regulate streamflow to the best interests of all users; residents, conservationists, recreationists. This is a continual source of conflict. They are also obliged by the State departments of inland fisheries and game and sea and shore fisheries to provide fish runs. The public utilities commission has some control over the hydroelectric plants, establishing rates which the utility may apply in charging its customers. The Department of the Interior has objected to the Errol storage dam because it would reduce duck-breeding grounds and deer years; the utility has countered that the dam reservoir could be used for recreation purposes. Although some downstream firms do not pay for the water or upkeep of the dams, they may use the water. The utilities represent a powerful lobby: these have most actively opposed the northeastern resources compact, and are adamant at any kind of governmental intervention. Apart from conflicts of interest in conservation and recreation, private landowners and real estate interests may oppose flooding, though it is probably true that land in the upper reaches of the river would go undeveloped in any way were it not for the utilities. What would happen if, for example, the park commission wished to buy land or use land in an area where a dam development would be proposed is another question.

E. WATERSHED MANAGEMENT

Our immediate watershed—area drained by the river and its tributaries—is Lake Auburn and the Little Androscoggin. By SCS terminology, we have no watershed program here, because this involves mostly flood protection and we do not need this. We do, however, have an extensive soil conservation district system, to which 903 Maine Basin farms are voluntary members. We have no serious erosion or gullying problems; activity of the soil conservation agents seems to center on aid in land use adjustment, i.e., changing land from present uses to more productive uses, timber management, pond building, crop rotation. Generally, farmers are not antagonistic toward conservation but they are not convinced that they need it. When they do so decide, they may form soil conservation districts, voluntary units which receive technical assistance, and apply for financial aid under the agricultural conservation program, which provides 50 percent of the cost of fertilizer, drainage, pond building, etc.; there is no repayment requirement. The major improvements in Oxford, Androscoggin, and Sagadahoc counties include the building of 115 farm ponds, woodland improvement to 4,450 acres, and general improvements to 182,114 acres of farmland. The NENYIAC report comments that only 20 percent of the basin land is in farms, and much of this is wooded, and recommends extended land use adjustments, capital improvements to crop and pastureland, periodic practices for crop and pastureland, woodland management and tree planting.

An interview with the Androscoggin County agent revealed that in his attempts to set up a quasi-watershed program, he got little cooperation from State agencies; he did, however, prefer the small program for its manageability, particularly since this is a voluntary program. Where governmental confusion exists, it is on the State level (this is a Federal agent) and peripheral conflicts occur with the State highway department which does not share its plans with affected farmers, then diverts drainage sources and blocks off land. He mentioned the 4:1 benefit-cost ratio required for ACP projects, and noted that unlike the Bureau of Reclamation, the Agriculture Department does not limit the size of farms receiving aid. He was not aware, however, of any speculation under this. Farmers in Maine, he said, are traditionally conservative about letting the Government "take over" their land, as they often view SCS aid. He had little faith in the NENYIAC study, which he regarded as vague and inaccurate, and noted that Secretary Benson has ordered a complete study done on conservation needs in every area of the country; this to be completed by 1960.

Agencies concerned with this informal watershed program, then, are Federal Department of Agriculture, Soil Conservation Service, and ACP; Forest Service, also under Agriculture and to some extent with the U.S. Fish and Wildlife Service. Statewide, the State department of agriculture, with its soil conservation committee acting as intermediary between the Federal SCS and the local units (the Soil Conservation committee is not a bureau of agriculture but reports directly to the Governor and council) the Forest Service; the highway department and the department of inland fisheries and game work jointly.

F. RECREATION AND FISH AND WILDLIFE

Maine has no State forests, strictly speaking, though it owns undeveloped woodland. Fifty thousand acres of the White Mountain National Forest—federally owned land—are in Maine; the remaining 715,250 acres are in New Hampshire. Timbering under Federal conservation management is practiced in this, as in all other, national forests. From these timber receipts, Maine receives 25 percent, last year about $2,300, which is used for highway and school building in townships.

The State park commission handles the regulation and development of community beaches, and supervises boating and recreation here. It cooperates with the National Park Service, Forest Service, and U.S. Fish and Wildlife Service, though it receives no financial aid from these. Neither is it reimbursed by local interests, nor does it reimburse local units for loss of taxes which might occur by purchase of park land. Presumably this is asked in the selling price. "Overwhelming local opposition" met an attempt to buy land on Androscoggin Lake this year. Local units receive technical, but not financial aid in building private facilities.

Under the park commission plan for improved State sites in Maine is a $243,000 development in the Rangeley Lakes region and one in the Grafton Notch area, $200,000. The Androscoggin Lake site has been included in this plan and currently the commission is looking for a Mosselookmeguntic site. All of this is in accordance with the NENYIAC report which recommended the development of 3 recreation areas, with roads, parking areas, trails, waterfronts and sanitary facilities in the areas of Mooselookmeguntic Lake, Androscoggin Lake and Umbagog Lake in New Hampshire. It also recommended three camp grounds: in the Aziscohos, Grafton Notch (mentioned above) and Richardson lake areas, the expansion of four wayside areas and the building of eight new areas, and the inception of an archaeological exploration on the site of an Indian village, Umbagog Lake. The total estimated first cost of these projects was over $3½ million.

The park commission, working with the Baxter Park Authority, department of inland fish and game, DED, highways and forest service and the three Federal agencies above, has supported the Northeast compact arrangement, or similar arrangements making for interagency cooperation. It has suggested also an interagency plan involving just these agencies, rather than all Federal and State agencies involved in water planning. This is similar to plans for grouping the similar water resource activities under separate headings.

G. MULTIPURPOSE PROJECTS

Other than its power dams, which serve as storage dams and could be developed as recreational sites, the basin has no multipurpose projects. The Errol Dam, authorized but not constructed, comes closest to such a definition.

III. The Basin's Administrative Organization

A. LOCAL

In Lewiston-Auburn, two water districts which are financial units only have been set up by the legislature. Both cities have public health departments and public works departments which supervise sanitation and building. We have no information on the other cities or communities in the basin. Soil conservation districts operate; there are no water users associations or watershed districts.

B. STATE

There are 10 State commissions formally involved in water development, and three communities which are adjuncts of these. Eight commissions probably operate in this basin. All are responsible to the Governor and council. Of these, the water improvement commission takes primary responsibility for pollution problems. Water development legislation is channeled through at least four committees: appropriations, natural resources, fisheries and game and sea and shore fisheries. There is no coordinating agency for the State agencies; they work together informally, but they are legally autonomous.

The only interstate commission which exists is the interstate water pollution control commission, mentioned previously, to which all New England States are signatories.

C. FEDERAL

The most recent and best example of Federal interagency work in this basin was the NENYIAC, organized by the Flood Control Act of 1950 to survey the land and water resources in the New England-New York area. The President authorized this and two other interagency commissions in the country to conduct its study, and the Department of the Army acted as chairman agency. State representatives sat in, though they had no legal status. Because the Federal agencies have no coordinating body, the agency representatives were responsible to their own department heads. Moreover, not all agencies had equal amounts of money to spend and this is apparent in the report, a 44 volume set, ranging, its critics say, from good to wildly visionary. It was, nevertheless, the first time State and Federal officials had sat together in a cooperative situation to examine entire policies, through the States were only guests, not legal members of the commission.

Thus the main criticisms of the agency-sponsored committees have arisen. They have no independent leadership reporting directly to the White House and they bring with them all of the existing housekeeping problems in Washington; they have no funds or staff of their own and must depend on doles from the member agencies; they have no legislative status, and the States have no legal status.

At the advice of the NENYIAC group, an interim committee, the northeastern resources committee, was set up when the interagency committee dissolved after the study. This was a talk-about group only; other than providing the advantages of a group discussing their problems, which, in an area where this has been little done, is useful, the NRC had no legal status.

To formalize the activity of this group, and to gain other advantages, largely in legal status, the Northeastern States separately filed in their legislatures a bill to form a northeastern resources committee under a northeastern water and related land resources compact; all but Vermont petitioned their legislatures to join this compact. However ponderous it sounds, it is a legitimate method of getting State recognition in the formation of Federal water policy. The provisions of the bill can be thus summarized: The commission, consisting of one member from each party State (six States) and one member each from the Federal commissions involved in these States (seven), are assigned the job of coordinating both State and Federal activity in the area of data collection (much more is needed) investigation and planning of projects, of estimating costs (a chance here is offered of getting locales to share costs) and public information. The commission would have the power to recommend to either States of Federal Government legislatures, or to intergovernmental agencies, changes in law or policy which would help resolve activities. Action is binding under a majority vote, i.e., majority of Federal and majority of State delegates. Financing is by State appropriation, with a formula based on 50 percent of population and 50 percent of gross land area. No State would pay more than $50,000 in 1 year. In Maine, an immediate appropriation of $2,500 was asked. This compact does not limit any agency to its jurisdiction or in its intention to join other compacts. It becomes effective when entered into by any three States, and when the United States has provided by law for Federal representation. Connecticut has already voted this compact; New Hampshire passed it without an appropriation.

This compact provides the following: Money for operation, a chance for the States to make their feelings in Federal policy known, legal status for States in Federal policymaking. Its criticisms, locally, center around its creating unnecessary Federal intervention. This is a view that weakens considerably when it is known that the Federal Government is quite firmly here, and that, quite the opposite of not wanting it to interfere, what is needed is for the States to provide some constructive interference at the Federal level. Federal criticisms of it are somewhat more searching: Because it has no impartial chairman and because its members are literally responsible to none but themselves, the committee tends to irresponsibility and does not cure one of the most pressing Federal problems, i.e., how to get agency heads, in the absence of a board of review for policy, to go around end to the White House. Second, the voting power is confused. Shall the Federal Government vote as a region, i.e., have one or two votes only? Or shall it be assumed that there is no competition and that problems will be solved by cooperation? If so, does this provide for the rivalry that may occur between two Federal agencies in voting, SCS and Corps, for example? Third, with chairmanship changing

annually, whose view from the bridge will the group have each year—and they could be diametrically opposed in 2 years. Fourth, the organization is inflexible, having been voted into the compact. It seems apparent that in choosing this measure, we inherit all the Federal problems. On the other hand, we can little afford not to inherit them because there is no other chance of influencing them. Utility lobbies pressured heavily against this measure at its hearing in Augusta.

D. HOW DO THESE THREE LEVELS WORK TOGETHER?

Not enough. The State agencies probably work closely with their Federal counterparts, but the local units tend to ignore State aid. For example, the WIC offers an advisory service to industries and municipalities considering pollution abatement, but this is seldom used.

IV. What Are the Major Conflicts Among Users?

Because industry is the best organized user of water, its interests supercede those of other groups. Industry gives voice to clean water demands, and lately has done a good share of cleaning up, but it has long held out against conservation and recreation interests, and has, in fact, waited until the damage was done. Utilities meet opposition from land owners who do not wish to sell land or from communities who might see other uses for land to be flooded, while conservationists cry out against draining or flooding of land used by wildlife, and against the locking out of fish. Though there is no irrigation problem here at present, any system which would divert water, as some dam building might do, brings protests from shore owners holding riparian rights, who regard water as "their" water, rather than as public water. Municipalities see no point in cleaning up the water that upstream groups have polluted, though they are also polluting it. These interests are too little represented at State levels, and while some of these conflicts are unresolvable, the dominant interest theory might take hold here.

V. What Are the Major Cost Problems?

We admit we're weak here. We eliminate first the major cost—benefit problems in other parts of the Nation, i.e., the conflict between Corps and Reclamation project costs, and between flood control as practiced by the Corps and by the Department of Agriculture. Our problems center mostly on the difficulties of financing agencies in a State with no income or corporation taxes, and upon problems of exacting local payment from poor communities. Following are the financial structures of which we know.

The Soil Conservation Service operates a program of technical aid and financial system, the agricultural conservation program mentioned previously. From this a farmer can get 50 percent of the cost of certain land improvements, without repayment. This benefits large farm owners, and no acreage limitations are set. There is room for malpractice here, but in this small-farm area, it has apparently not occurred.

In pollution abatement, the Federal Government pays about $57 to every $40 spent by the State on control. No reimbursement from localities is required. Under the same law, Public Law 660, cities wishing to build treatment plants can get up to 30 percent of $250,000 of the total cost from the Federal Government while the State will provide 20 percent of the total cost. Again no reimbursement is needed. A bill proposed by Rep. Blatnik (Democrat, of New York) would double the amount of money available for this measure, while a contrary bill filed by Reed (Republican, of New York) would return the whole situation to the States.

With regard to hydro plants, these are all private, and the only Federal or State financial intervention is invested in the PUC, which can set rates. We do not know if any agency can set minimum land prices; it must be understood that this is a touchy point in most locales. A landowner will often sell for other than economic reasons, though the utilities claim that only a handful of cases have ever come to adjudication because of supposedly unfair—low—payment prices. The principal importance of the utilities in this is that they are enormously strong, and present the strongest opposition to any measures that will cost them or the municipalities in which they are situated any money; moreover, since they do not pay taxes, they do not bear their full burden of

sharing in State measures to develop water. Building of treatment plants by the mills has been a belated effort to correct this.

The park commission is supported by legislative appropriation and receives no reimbursement from local groups in its work.

The department of inland fisheries and game is supported in 75 percent of its work by the Federal Government; the rest of its revenue comes from the issuance of licenses. It receives no Federal appropriation. Neither is it reimbursed by any local groups for services it performs. This is worth considering in an area that receives a good deal of income from recreation exploitation.

The public utilities commission is financed on a 50–50 basis by the State and Federal Governments. Among its duties is a data gathering service which permits private concerns to plan hydro sites.

In summary, the WIC and inland fish and game services might be considered for local reimbursement, as might the SCS aid. SCS might put limitations on farm size to avoid speculation. Similar reimbursement policies might be needed for the park commission.

VI. What Is the Future of the Androscoggin Basin?

There is very little doubt that the area of most public interest is pollution abatement. Regrettably, this interest extends only so far as hoping someone else will do the job.

Beyond this obvious need, the NENYIAC report recommends for the entire subregion, including the St. Croix, Saco, Presumpscot, Kennebec, Penobscot, St. John, and coastal area basins, as well as the Androscoggin, an investment in municipal treatment facilities of 27 million as opposed to a recommendation of 12 million for industry; it is clear where the problem now lies.

Except for continuing watershed improvement, the only other development contingent on pollution abatement is recreation development. It is difficult indeed to reconcile the problem of how industries who say they cannot afford abatement can be required to do so, or how money-poor communities dependent upon industry's tenure in the region can afford to do so. On the other hand, river pollution hinders further industrial expansion in that it limits the kinds and number of firms who can use unclean water or limited water. NENYIAC proposed municipal sites in this basin amounting to $4,196,000, community sites amounting to $151,000, and industrial sites amounting to $3,253,000.

Hydro development is private; if utilities say they cannot further develop the river they will not. This, in effect, means that the State will not either because the utilities are still enormously powerful lobbyists.

With these caveats, consider the NENYIAC recommendations. Pollution abatement: Installation of 11 primary and 2 secondary municipal plants, sewage systems for 9 communities, and treatment plants for 22 industries. Hydro development: Expansion and development of seven hydro sites, including five existing sites; these provide the minimum flood control needed here also. Recreation: Three developments, one in Mooselookmeguntic area, one on the Little Androscoggin, one on Umbagog Lake, and a series of trailways and wayside sites. Watershed management: Expanded fish and wildlife protection vis-a-vis pollution difficulties and hydro building. The region plan includes the same emphasis, bearing heavily toward fish and wildlife protection and pollution control.

As to regional planning, it is safe to say that outside of the pollution control compact, nothing of the proportion of the northeast compact has risen heretofore. Despite its limitations it provides the only opportunity so far for local and State interests to work face to face with Federal interests. Opposition to the compact on the grounds of its constituting Federal intervention may put the cart before the horse: It provides our only chance for some State intervention in Federal affairs. It is well to remember that the compact carries with it all of the problems of Federal interagency rivalry and conflict over water use. That those conflicts are already here—witness the number of Federal agencies working in this basin alone, nor do we have much dealing with what many have called Washington's most powerful lobby, the Corps of Engineers—is apparent.

Separate departmental plans have progressed. The park commission has drawn up a comprehensive plan which applies in this basin; the Errol, N.H., Dam has been authorized. Most of the regional navigation proposals—channel dredging and harbor construction—have been completed. Classification of the Androscoggin should be completed by 1961.

VII. Why This Study Relates to the National Problem

We'd like to point out the problems that this one basin has in common with the Federal Government, and how Federal policy confusions devolve upon us. Not all of these situations are undesirable; which appear to be?

Federal Problems	Shared	State Problems

Internal coordination

Note the number of agencies handling water resource problems, some doing the same work.

Note the absence of any supervisory body over the technical activity of these agencies.

Note the number of legislative committees through which these agencies must work.

Note that the WIC is subjected to tremendous pressure from lobbies opposing stream cleanup.

Note that agency heads resist coordination of their activities claming that they will be hampered by the group process. In many ways they are right.

Equitable financing

Note that in areas of park development and pollution abatement, local interests who may profit do not share cost.

Note that SCS activity gives a 50-percent subsidy to soil conservation activity. Whether this is too much, not enough, or right can be argued. It can retract benefits if the land is not used well.

Regional of basin planning

Note that there is little formal planning with State and local officials. We work with already formed policy.

Note the conflicts of interest both governmentally and locally which must be smoothed out before effective planning can begin.

Note that in the NENYIAC report, an attempt at joint planning was made. But because the group had only to depend on its own money, some agencies did better work than others.

Report on Know Your River Basin, Presumpscot River

Physical characteristics

The Presumpscot subbasin is about 55 miles long with a maximum width of about 20 miles. The terrain is generally rolling country except near the ocean where the flat coastal plain is reached. The Presumpscot River and other streams entering Casco Bay drain approximately 950 square miles of the southwestern part of Maine. The only other river of consequence here is the Royal River to the east. The Presumpscot flows southeasterly 24 miles, starting at Sebago Lake and running to the ocean, emptying into Casco Bay a few miles above Portland. The watershed is 645 square miles. Sebago is 45 square miles. Rock formation is mainly granite, covered with glacial sand and gravel. About one-fifth is in cleared farmland and the remainder is principally cutover woodland that has been reseeded to hardwoods and conifers. Precipitation is rather uniform throughout the area and the seasons, averaging about 42 inches annually. Summer temperatures average about 66° F. and winter, about 22° F.

Population characteristics

The 1950 population of the subbasin is estimated to be 145,000 of which more than half live in Portland. Most of the population is centered along the coast and the northern regions are sparsely settled. New growth is in the nearby suburbs of Portland.

Economic characteristics

The land is rather fertile and agriculture is profitable. There are approximately 379 establishments manufacturing here. Because of its excellent har-

bor, Portland has become the largest shipping and industrial center north of Boston and it is the major economic influence in the subbasin. Due to the geographical location away from the areas of greater population, Portland is finding difficulty in persuading new industries to locate here, and the harbor is suffering from the opening of winter Canadian ports. Great effort is being made to lure new types of shipping through the port to help bolster our sagging economy. There exist both sufficient water supply and power for the area. The abundance of recreational opportunities in a readily accessible region makes this area particularly favorable for this type of development.

COMMUNITY ORGANIZATION

The Port Committee of the Greater Portland Chamber of Commerce discusses and acts in behalf of the future of the port, harbor improvement project in Portland, public relations for the port, and literature and information on the city of Portland and port activities. The area development council is dedicated to the industrial and economic development of the region.

The board of harbor commissioners consists of five members appointed to 4-year terms by the Governor. The board reviews and grants applications to work on piers, establishes harbor lines, checks on harbor pollution, and establishes harbor rules.

The Propeller Club, port of Portland, promotes maritime activities in the State. The Maine Traffic Club is comprised of shippers, receivers, port officials, railroads, trucking companies, steamship agents, airlines, and others, and promotes better acquaintance with a view to understanding mutual problems. The Maine Port Authority has five directors, four appointed by the Governor, one by the city of Portland. They serve 3-year terms, elect a president from their number. Funds come from Portland, South Portland, Portland Shipping Association, and the State, for the purpose of fostering development of maritime activities in the State of Maine. There are also average private boating clubs, fish and game clubs, and private beach associations.

WATER USE AND CONTROL PROGRAMS

Water supply

Sebago Lake through the Portland Water District, a municipal corporation, supplies coastal areas such as Portland, South Portland, Scarboro, Falmouth, Cape Elizabeth, part of Cumberland, and Mackworth, Great Diamond, Little Diamond, Peaks, and Cushing's Islands, as well as Westbrook, Gorham, South Windham. Separately it supplies North Windham, Windham Center, and Windham Hill from a waterworks system taking water from wells along the shore of Chaffin Pond. The town of Standish is also supplied through two separate systems, one, Steep Falls, taking water from wells along Tucker Brook; the other, Sebago, Lake Village and Standish Corner, taking water from the lower bay of Sebago Lake. The district was created in 1907. It is a nonprofit municipal corporation dedicated to the business of supplying water at cost within its franchised area. The Maine Department of Health and Welfare, division of sanitary engineering directly supervises enforcement of the State plumbing code in towns bordering the lake.

POLLUTION ABATEMENT

The Presumpscot River becomes so highly polluted at Westbrook that nuisance conditions prevail from there to its outlet at the ocean. Untreated sewage from over 10,500 people in Westbrook is discharged into the river which, although of unsatisfactory quality is used to a limited degree for the watering of livestock, irrigation, game fishing, and wildlife. The only source of pollution of consequence above Westbrook is from the town of South Windham where the sewage of approximately 460 people is emptied into the river. Over 3,500 people in South Portland add sewage to Fore River, while a tributary, Long Creek, receives the effluent from a septic tank serving 2,000 people in Red Bank Village. Portland Harbor is polluted by the untreated sewage of over 74,000 people in the city. In Cumberland, 200 contribute to the load, and in Falmouth, 700. The majority of towns and cities on the watercourses in this area require new treatment plants if pollution of these and tidal waters is to be reduced. Great quantities of varied industrial wastes are discharged to the tidewaters of Portland Harbor and Fore River. The considerable amount of water exchange,

however, which occurs with the ebbing and flowing of the tide helps to maintain a far lower pollution concentration than otherwise could be maintained. Wastes discharged include fish wastes from canning, packing, fish meal, fish-liver oil plants, and a variety of other industrial plants. There are many types of industry in the area, especially along the Presumpscot River in Westbrook where considerable industrial pollution is caused by a textile mill and a large pulp and paper mill. All clam flats from the town of Falmouth to Portland Head Light in Cape Elizabeth are closed. East End Beach has on a few occasions been closed for swimming. The water improvement commission submits to each legislature its proposed and recommended classification or reclassification of various specific surface waters and tidal flats, concerning which public hearings have been held. If these classifications are adopted, any disposal of waste so as to lower the quality of the water thereof shall be unlawful, and legal action may be taken; 90 percent of the waters of Maine has been classified. However, the 10 percent remaining involves the area of greatest offense, to wit: the Presumpscot below Westbrook. The Federal Water Pollution Control Act affects the municipalities in this area very slightly because of the need for such large expenditures and the bonded indebtedness limitations, plus the school needs of the present—$250,000 is too small a sum to affect a proposal needing $8,400,000 to do a truly adequate job which is what Portland is heading for. The State program is such that the act can be implemented and has been in a few spots.

FLOOD CONTROL

Generally, floods in this area, being of such minor importance, cause little damage and that mainly to farmland. The U.S. Soil Conservation Service has interest in this problem but the costs so far outweigh the benefits received that action would not be feasible.

IRRIGATION

There is one farm in the basin which is irrigated. This is located in Gorham and is a showplace for the area. Any extensive use of irrigation would in time bring problems concerning riparian rights but at present no problem exists.

POWER

The Central Maine Power Co. has no main plants in this area. On Cousin's Island there is located an auxiliary plant but no water is taken from the Presumpscot for generation of power. The Federal Power Commission enters the control picture in a very general way. At the present time, tax moneys are being paid to the city of South Portland ($98,000 every year) and Yarmouth ($230,000 for the first 4 years of this project) by the Central Maine Power Co.

NAVIGATION

The main and approach channels of Portland Harbor are 4.7 miles; 5 miles to the Boston & Maine Railroad bridge, which last 0.3 miles is 35 feet deep. The approach channel is 30 feet deep and the back cove channel is 12 feet deep. Navigation is of major importance to the area. Movement of oil is the principal traffic, with coal, woodpulp, flour, newsprint, grain, scrap metal, china clay, and sulfur. In 1957, Portland handled 16,395,591 tons aboard 900 ships mainly inbound; $4,413,000 has been spent by the Corps of Engineers through 1958 in completing projects in Portland Harbor. Commerce and vessel traffic have more than doubled since the last project was completed. A study has been authorized to deepen the channel to 45 feet. Completion of the study is expected in 1960. The department of economic development and the Maine Port Authority are also concerned here.

WATERSHED MANGEMENT

The U.S. Soil Conservation Service has assisted 300 farmers with conservation plans. These farms constitute some 50 square miles of the watershed area. There are 70 farm ponds which are stocked with fish. The State soil conservation committee also assists.

RECREATION, FISH AND WILDLIFE

The park and water recreation assets in our locality are so numerous that it is difficult to mention all of them. Within the subbasin every form of water recreation is practiced. Sebago State Park is host each year to 175,000 visitors and is self-supporting. The harbor is used for much leisure activity in the summer, leading to the many islands in Casco Bay as it does. A new State park is scheduled for Crescent Beach, with a capacity of 75,000 per year and Two Lights will take care of 75,000 per year with 12-month supervision. An island park is being considered by this session of the lesgislature. The Federal Department of Agriculture, the State sea and shore fisheries department are involved in a project which concerns shellfish in the harbor and river mouth. The State park commission and soil conservation committee are concerned here.

ADMINISTRATIVE ORGANIZATION IN THE RIVER BASIN

The Portland Water District is the sole agency engaged in local water administration of drinking water. The city health department tests the water at East End Beach for pollution in the summer months. The State departments of health and welfare, water improvement commission, public utilities commission, Inland fish and game are concerned with this watershed, as are seven other State agencies. The Maine Port Authority is the only such organization established here. There is no form for multiple-purpose river development in our basin. Being contained completely in the State of Maine, the Presumpscot is not affected by the New England Interstate Water Pollution Control Commission. A new agency, the northeastern water and related land resources compact being accepted and approved by both the Federal Congress and the several States to which membership is open, will be known as the Northeastern Resources Commission, having as functions the collection and interpretation of basic data, investigation and planning of water and related land resources projects, programing, including scheduling, of water and related land resources construction and development; encouraging of the referral of plans or proposals for resources projects to the commission. The Federal agencies concerned will be the Corps of Engineers, Geological Survey, Public Health Service, Soil Conservation Service, Weather Bureau, Federal Power Commission.

The U.S. Public Health Service and the water improvement Commission work most closely of all the agencies. The water improvement commission has Federal aid from Public Law 660. The State sea and shore fisheries Department works with the U.S. Department of Agriculture and Health, Education and Welfare on the shellfish control.

MAJOR CONFLICTS OF USE

In this basin the greatest point of friction comes in connection with pollution. The river has been used as a waste carrier since the 1700's and it is a matter of economic factors which will make the upgrading of this river in the near future somewhat uncertain. Both industry and municipal dumping of waste spoils the waters for most recreational purposes near the center of the population. Clam flats in the area are closed. It is a problem for both industry and local governments, and one which must be wrestled with in the next decade.

MAJOR PROBLEMS OF ALLOCATING BENEFITS, RESPONSIBILITIES, AND COSTS

There is a need of more local and State initiative in developing water resource facilities. Having such an excellent supply of drinking water in this area, most private citizens tend to overlook the dangers and complex monetary problems involved in an overall water picture. A more widespread understanding of all the agencies interested and their functions, community of interests, and fiscal problems would soon result in calls for more clear-cut lines of responsibility.

FUTURE OF THE PRESUMPSCOT BASIN

Pollution being our No. 1 problem, most attention must be given to the long-range plans for abatement. We have on the books laws which will eventually put in motion the machinery to clean up the river and harbor. Through lack of public understanding and support, the way of the water improvement commission has been made more difficult. As of this time, it is felt that a complete

system of classification for the surface waters of Maine will be accomplished in 6 years. This is, of course, not considering the problem of convincing the legislature to accept the commission's recommendations. A major proposal for improving coordinated planning in the basin is the basin planning commission to study, decide, and develop; establish overall planning agency to encourage coordinated planning. The PAS report contained a suggestion for combining several departments—under the department of economic development were to be the water improvement commission, the departments of sea and shore fisheries, fish and game.

Possibly the water improvement commission, health and welfare, and conservation development agencies could have a more complete area of interests.

A new form of organization could be a water control agency to consider the field of minimum flow, one of the major sore points of many basins.

This very incomplete report on the "Know Your River Basin" study is a result of interviews with, and data from the various persons and agencies listed below:
Mr. Herman Burgi, Jr., treasurer and general manager, Portland Water District.
Mr. Edward Langlois, general manager, Maine Port Authority.
Mr. Lawrence Stuart, director, Maine State Park Commission.
Mr. Raeburn MacDonald, Maine Water Improvement Commission.
Mr. Graham S. Finney, planning director, city of Portland.
Mr. Norman Winch, City of Portland Health Department.
Engineer Bassett, U.S. Army Engineers.
Mr. S. Von Day, Cumberland County agent, U.S. Soil Conservation Service.
Mr. William Brackett, Central Maine Power Co.

The CHAIRMAN. Thank you, Mrs. Freeman.

I would like to say that this is the 21st hearing of this committee, each one of which one of the good statements given us has been by the League of Women Voters.

Senator MUSKIE. Thank you, Mrs. Freeman.

Our next witness is Mr. William H. Pynchon, who appears here in the capacity of a private citizen.

STATEMENT OF WILLIAM H. PYNCHON, A PRIVATE CITIZEN OF WINTHROP, MAINE

Mr. PYNCHON. Senator Kerr, Senator Hart, Senator Muskie, Senator Moss, and Governor Clauson, before reading my prepared statement I would like to comment just very briefly on a few points that were brought up today either through questioning from the committee or as asides from people who gave testimony.

To Senator Hart who made mention of Public Law 566 which is more commonly known as the small watersheds project, and I would like to comment here by saying that in this room I do know of at least a half dozen people who at one time or another in the past 5 years have participated in an effort to launch the first small watershed project in the State of Maine.

The cards initially are stacked against us, not only because of considerable public apathy and failure to understand the great benefit that can stem from proper management of a small watershed area, but also from the fact that on the basis of cost-benefit ratio the Federal program is against us in that this cost-benefit ratio is geared primarily to flood conditions which, in the State of Maine, are very much isolated.

I do not mean to infer for a moment that we do not have our flood threats but because of the extent of our river network, the length of many of our streams, it is impossible to develop a favorable cost-benefit ratio in order to launch such a program.

If I were to make a suggestion it would be that this small watershed project which has been so successful in other areas of the United States, particularly in the western regions, but not entirely without some merit in the East, particularly Massachusetts, that it be made possible through this source of Federal funds to encompass those areas which now are unable to participate.

Senator Kerr just——

Senator HART. I seek to develop an understanding of your report. You are arguing in substance then that the cost-benefit ratio should include what factors?

The CHAIRMAN. He is suggesting that the program should be made more pliable so that it might be taken advantage of whether they were able to meet the provisions of the law for the cost-benefit ratio or not.

Senator HART. That I understand. But I wondered specifically what factors you would use as a measuring stick.

The CHAIRMAN. If you eliminated the requirements then the factors would not be so important.

Senator HART. Any soil conservation district or small watershed would come in and ask and then the rule of thumb would be irrigation, drainage——

Mr. PYNCHON. Of course, obviously, there has to be some means of measuring whether an area, a given area, is going to be able to participate.

Without fail, my experience in this small watershed program has been that in the initial stages, even where in retrospect now, I can say that an organization was successful—I am not speaking for the State of Maine now, I am speaking for other areas—was successful in launching a small watershed project that in the initial stages the comprehension of the interested public was very small.

This is initially a nebulous thing. This may seem a little bit naive but actually it is true to a great extent and that is that the benefits from the small watershed project are only limited by the imagination of the citizenry who live in that particular area.

You cannot find in any two instances, I do not believe, that the organization of a watershed association is the same or that their goals are the same. It differs radically. Just as an aside, Senator Kerr, you mentioned Angus cattle. One of my dreams, if I may refer to it as that, for the State of Maine, is that we here can supplement what is a diminishing agricultural return I believe by encouraging the beef cattle industry. I happen to be the product of an area where barley was our staple crop as a substitute for corn and when I look at the vast areas that we have here in Maine that could be utilized for the raising of barley and the feeding out of beef cattle it literally makes my mouth water.

There is very little feed stock that is being butchered or is being exported from this State. It is mostly a grass proposition and it is indeed unfortunate.

There are one or two points which I think should be covered briefly and that is in one instance a previous speaker was a bit hesitant—in fact, quite hesitant—about stating that our coastal areas were suffering from pollution as far as recreation was concerned.

For the record I would like to point out the fact that as recently as last summer the Old Orchard Beach area in the southern area of the

State was threatened with the closing of a beach that probably takes care of a larger population, larger visiting population, than any other area of the State. It was indeed a real threat and as far as I know the threat is still with us. That situation certainly doesn't miss.

It seems unfortunate to me that in the case of many—certainly not all, but of many—previous speakers, that there was an inclination to hedge, to say that they were not qualified to discuss or that the information was not available. This is something that has been going on for an endless period of time in this State and it is high time that the State of Maine was lining out a water resources policy that the public cannot only absorb and understand but that is, in fact sharing benefits as far as the State itself is concerned.

Now for my prepared statement.

I have listened with interest to the array of speakers that have preceded me today and I confess to having frequently changed my position in relation to my chair, not so much due to physical discomfort but rather due to an extreme uneasiness caused by repetitious detail that can best be summarized by saying that apparently all is well with Maine's water resource.

If left in the hands of those that control its flow and use, the future is indeed bright, or so it would seem.

For those of you who have traveled long distances in the transaction of the business of this committee, in recent months, and who, I am sure, have been exposed to technical presentations that is vigorous, progressive, stimulating, encouraging and—it is probably safe to add—interesting, I must apologize for much of what has transpired here today in the presentation of many prepared papers. I am sure it is unnecessary for me to make the remark before such a finely staffed committee accustomed to shrewdly discerning and then rejecting the specious argument of the public relations counselor, but for the record I am compelled to say that by and large there has been a dismal failure to present facts here today.

This is not new to the Maine scene and is merely further manifestation of the manipulation of public opinion that has for so long transpired here on this vitally important issue of water.

I shall only add to this that the material presented today, which is largely the result of longtime influence of the public relations men, warrants considerable scrutiny.

The Maine public is not entirely unsuspecting, but thus far in our history of water studies, our citizenry has had the philosophy of "all is well with Maine's water resource" forced upon it. It matters not what the problem is that arises, from some source a propaganda machine goes to work and so muddies the waters of reason that a fair appraisal of a particular point is impossible.

For the record, I want to cite an example of this propaganda. As you dwell on this thing for a moment of your own travels to any place on almost any mission, is it not true that a truly observant individual brings back something constructive, something good about another area? I am about to quote from the Kennebec Journal of October 2, 1957. The Journal is published daily in Augusta, Maine. The occasion is the return from Atlanta, Ga., of the representative of an organized industrial group.

As a result of some serious stirrings by the people of this area interest in the Kennebec River was more evident at this time than at any time in years and this industrial group had sent its representatives to the Fourth National Watershed Congress. The watershed congress was summed up by this representative in these words and I quote:

> This is a Yankee characteristic not to boast about accomplishments but Maine has a conservation record that can hardly be equaled by any other State. I was disappointed because their—meaning Georgia's—problems do not apply here. To hear them thumping the tub you would think they had done something in Atlanta.

This, mind you, from a man who has just been to a national conference where the Nation's water problems are aired annually. The remark had the desired effect, despite rebuttal, which in hindsight was too meek. The Kennebec Valley Improvement Council, which was then a new organization, was dead.

Believe me, we have had our share and more of the obtuse and phony argument presented by those who are less than honest in their presentations. These ethically soft people set out to win a case for their client, right or wrong, just the way a lawyer would.

And so here today, we have the dismal spectacle of one of the 50 States of this great Nation, presenting a self-satisfied air as regards its water resource and declaiming, by and large, that there really are no problems. Once again, all is well with Maine's water resource.

To those who have been here all day, it must be obvious that my rather frank appraisal of the various presentations does not include all speakers. To those of you who have worked diligently and hard and honestly for a water policy for Maine, my sincere apologies if I have not soon enough gotten around to saying that you are not included in the above remarks.

Many of you are my friends, and I trust that we will survive this era and still be physically capable of working effectively in the period of awakening that most surely lies beyond.

I read with considerable interest Mr. Schad's speech—Mr. Schad being, to those who do not know, the staff director of this committee—his speech given before the Association of Western State Engineers in Santa Fe, N. Mex., on last August 20. It was noted therein considerable frankness, particularly over the matter of the forthcoming presidential election year and the fact that members of this committee will be otherwise occupied during the late summer and fall of 1960. It is good to know that people can be candid about the business of their profession and I trust that my frankness, in turn, will be taken in good grace.

We have business to transact in Maine, business of water resource, but we have a very long way to travel before there is even a semblance of State policy. The best we can do now is assemble an informal committee on water resource made up of various State department heads, and this morning Senator Muskie covered that point.

The fact that this committee exists is hardly known and I may, right now, be assuming much in regard to this group that is not accurate.

Mr. Chairman, the fact is that your time and the time of your staff has been wasted in some degree in traveling to Augusta, Maine, because Maine cannot offer you anything more than one group saying

"It is polluted," and the guy on the other side of the fence saying, "It ain't so, and even if it is what are you going to do about it?" Obviously there is more to the subject of water than pollution but around here we haven't officially started incorporating the public on the other aspects.

In your information sheet, you state that this committee is seeking certain information from the public and groups having a special interest in the water resources field.

Under subparagraph 3, on the first page, you add:

> Any other information believed to be helpful in considering water resources policy for the future.

If I may make a contribution, it will not be in the technical field. I am only a lay citizen with a consuming interest and a desire to be reasonable. But it seems to me that with water becoming a critical commodity—and I speak on a nationwide basis without regard to locale—that there must be greater editorial and governmental vigilance for intercepting the public statement that says nothing, or is merely released to further becloud an issue that the public under most favorable circumstances can barely understand.

After all, those areas of the Nation without public water policy—and there are others beside Maine—that are planning economically for the next 25 or 50 years cannot practically afford to go on endlessly without the formulation of water policy. Yet it is obvious that there are those—and you have heard them today—who are not pressing hard in the direction of a State water policy.

It is almost trite to say—for it has been said so many thousands of times in recent years—that we humans who are deriving the benefits of nature must also work in concert if maximum benefits are to be obtained for all of our people.

This is so true—almost pitifully true—of Maine. Our overall economy is less than vigorous. At this time of year, people who have worked through the summer vacation and fall hunting periods, because of the tourist industry, are tightening their belts for the winter.

There is little or no employment until spring unless a man turns to one of our renewable natural resources—and there he can find work—in the woods or through the ice.

As a matter of course, if your committee in its evaluation of testimony around the Nation will not lose sight of those areas that depend in great part on a continuation of rural life, including possibly sea coast areas, coupled with a seasonal influx of visitors, you will, I am sure, have made a substantial contribution to the economic stabilization of these areas.

Maine needs water. The how and where of this need is not yet clear in the public mind. But it is through hearings of this nature that answers will be found, providing responsible persons take issue with the bunco experts and invariably are heard from later.

In closing, I want to quote from a speech made some time ago by Mr. Bernard Orell, vice president of the Weyerhaeuser Co. Sound precepts are worthy of repeating and repeating again. I think these are sound precepts. May I remind the skeptical that this is a representative of big business speaking. I quote:

> There is no place in the conservation movement for blanket indictments of whole industries or of whole groups on the record of a few. The labeling of any

group with such titles as "land grab gang," "special interests," or "exploiters of our natural resources," is as patently unfair as it is for a forest industry man to accuse all sportsmen or campers of being "irresponsible," "gun happy," "firebugs," or "litterbugs" and therefore unfit to exercise the privilege of hunting on private land * * *. These blanket indictments thrown down from the rostrum or blared in the press make for fine sonics, but exclude any possibility of mutual interest or a hearing of the other point of view. Resentment becomes the order of the day, facts become distorted, and instead of working closely together in the solution of problems, the opposite is true. There is no place here for personal prejudice, suspicion, backbiting, dishonesty, or evasion.

We all seem to feel we possess the inalienable right to criticize. Conversely, we almost invariably find criticism unpalatable. In presenting criticism, which is in fact our right and responsibility, it is extremely important that such criticism be presented with tact and diplomacy. If we are the recipients of criticism it is absolutely essential we profit by it no matter how the method of presentation. We should recognize the fact that when criticism is felt to be necessary, either misunderstanding or actual error was in evidence. This also indicates interest in what is being done. It is a duty to examine carefully every criticism rendered before rejecting it.

And, finally, Senator Kerr, as a private citizen, I would like to express my personal appreciation, and I am sure that this is shared by many people who have heard your remarks today or who read your remarks in this morning's newspaper. Your presence on the Maine scene with regard to our water resources problems—I cannot say "policy"—problems has done a great deal I believe to clarify the issue and to bring certain salient points out into the open.

I thank you for this opportunity to be heard.

The CHAIRMAN. Thank you very much, Mr. Pynchon.

Senator MUSKIE. Thank you.

We have two more witnesses, Mr. Chairman, who have indicated that their testimony will be brief.

First is Mr. Monie, chairman of the Maine Water Utilities Association Committee.

STATEMENT OF WILLIAM D. MONIE, CHAIRMAN, MAINE WATER UTILITIES ASSOCIATION COMMITTEE

Mr. MONIE. Mr. Chairman and members of the committee.

My name is William D. Monie and I am chairman of the committee resources of the Water Utilities Association.

The consumption of water has increased tremendously over the years. In 1955 public water supplies in the United States served a population of 115 million with 17 billion gallons per day, or an average of 148 gallons per person per day.

With constantly increasing standards of living, increased water using devices, and increased population, the use of water in this country is on the upswing. Authorities have computed that water use in the United States has quadrupled while population doubled, and population continues to increase by 3.9 million a year.

The 1955 figure of 148 gallons per person per day average usage from public water supplies is only a drop in the bucket to the actual consumption of water used per person per day from all sources. Public water supply furnishes only a small portion of water used for industrial purposes and irrigation. Statisticians have computed that for each person in this country about 1,300 gallons of water per day is required to provide us with our present standard of living, without including water used in power production.

We must also include recreation in our study of water uses. With more leisure time and greater prosperity an ever-increasing number of our people are making use of our water resources for swimming, boating, fishing, camping, and so forth.

From this information it is obvious that a person doesn't have to be a Rhodes scholar to visualize the ever-increasing importance of water in this country as its population and standards of living go forward.

We have the following interests with fingers in and competing for a slice of the water pie: The public water supply; the farmer with irrigation; industry, power, recreation; and the individual water-user not served by public supplies. The most important use is the public water supply, for without water to sustain life there is no need for any of the other uses.

We are fortunate in Maine that our water supplies statewide are on the average more than adequate to meet the needs of the State. I do not mean to imply that there are not regions in the State that do no suffer from inadequate water supply. There are such regions where the cost of bringing the supplies from ample sources are economically infeasible. Nevertheless, to date there has been at most times more than sufficient water available in the State for all interests so that serious water-right fights between the parties above mentioned have not occurred.

However, as population increases in Maine with corresponding industrial expansion and with all the resultant increases in water demand, the time will come when additional legislation will be necessary so as to apportion the proper uses of the State's great asset, water.

The Maine Water Utilities Association in recognition of future needs has appointed a committee on natural resources to study this matter and recommend to the association types of legislation which it should support. The utilities association feels strongly that such legislation should be considered now when it can be done calmly and allow all interests to study the matter rather than see legislation enacted in the future under emergency conditions with resultant stresses.

The association's committee has been authorized to have abstracted all existing laws of the State relating to water resources. When this information has been compiled and studied, an attempt will be made to aid in the preparing of a bill for submission to the legislature.

The Maine Water Utilities Association is concerned over the pollution of the waters of the State. This interest is concerned with both surface and underground water supplies. The association is strongly behind all programs designed to stop further pollution and commonsense programs aimed at the decrease and eventual elimination of existing pollution.

In this respect we are concerned with the increased amount of boating in our rivers and lakes. These boats, large and small, together with marinas where they are concentrated, are providing ever-increasing pollution to our waters. It is our opinion that legislation is also needed to curtail this newer source of pollution.

The association is in accord with efforts now being made to survey the underground water potential of this State and feel that this pro-

gram should be expanded greatly. Recent developments in Maine show a marked tendency toward the use of ground water for public water supplies. An adequate ground water supply protected from pollution can be the economic answer to water supply for communities distant from surface supplies.

We are also interested in the proper development and uses of our watershed areas to conserve both our soil and our water. In this regard, the association is concerned with the filling in of Great Pond shore areas for the purpose of making land. This practice if allowed to continue, could, over a long period of time, seriously deplete water storage.

The Maine Water Utilities Association is well aware of the great value to the people of the State of Maine of its water supply and will support all reasonable efforts to keep it free of pollution and to properly regulate its use.

Thank you very much.

The CHAIRMAN. Thank you, Mr. Monie.

Senator MUSKIE. Thank you, Mr. Monie.

The last witness we have on our list, Mr. Chairman, is a representative of the State chamber of commerce, Mr. Leonard Bishop.

The CHAIRMAN. All right, Mr. Bishop.

STATEMENT OF LEONARD L. BISHOP, PRESIDENT, MAINE STATE CHAMBER OF COMMERCE

Mr. BISHOP. Mr. Chairman and members of the committee, Senator Muskie, and Governor Clauson, my name is Leonard L. Bishop. I am president of the Maine State Chamber of Commerce, a Statewide business organization, with offices located in Portland, Maine.

I am sure that it is very evident to the committee that the State of Maine is blessed with good and abundant water resources and that we do not have reason for concern for the future in this area of our natral resources, so far as can be seen at the present.

The comments which I am about to make, reflect the viewpoint of our members, who throughout the years have strongly advocated the principle of States' rights.

We are opposed to intervention by the Federal Government in affairs that are essentially the concern of the individual States.

It is our conviction that the function of the Federal Government in regard to water resources is the accomplishment of a broad research program and the drafting of a sound water resources development policy for consideration of the Congress. Such a policy should be predicated on the American way of life with full and complete recognition of the rights of the individual States.

It should guarantee to our people the right to develop water resources based on sound economics and actual needs. Each State has its individual problems in such matters and it must be obvious that no national plan could possibly provide the solution. There may be water problems in many States that do not exist in Maine but we maintain that it is their prerogative to deal with them.

It has been demonstrated that research is the key to progress and it has likewise been proven that large-scale research is more economical and more productive than piece-meal efforts along similar lines.

This is a job that we believe could be better done at the Federal level than by the individual States and, in our opinion, at less cost to the taxpayer.

Studies made by Federal agencies are useful and provide valuable sources of information, however, the solutions to problems should be found by the individual States. Development of sound solution to water resources problems by the States will result in a workable national problem.

Maine is compelled to compete in the marketplace with other areas of our Nation and, we hope, will always advance its competitive position through actions reflecting a favorable "business climate."

In conclusion, Mr. Chairman, I would address myself briefly to the testimony offered by Mr. McMahon on behalf of the Maine Public Utilities Commission.

It is apparent that the members of the commission—if Mr. McMahon was speaking for the other members—are laboring under the delusion that so-called Federal money is manna from heaven and that the Federal Government can solve its fiscal problems by borrowing money at 4½ percent—or more—and loaning it out at 2 percent for various and sundry projects, all of which purport to be in the best interest of the people.

Unless I have been misinformed, Mr. Chairman, the Federal Government has but one source of revenue and that source is the millions of taxpaying citizens of this great Nation, commonly referred to as "the people."

It may be news to the members of the committee and to your colleagues in Congress that at long last "the people" have come to the realization that "Federal money," whether it be in the form of grants-in-aid, matching funds, loans or what have you, is a snare and a delusion.

Actually, Federal funds, when returned to the States, cities, and towns in whatever form, represent nothing more than a small part of the hard-earned dollars taken from our people in the first instance through the imposition of a myriad of Federal taxes.

You will note that I said a small part of our hard-earned dollars. It could not be otherwise, for the dollars originally collected have been subjected to the unrealistic overhead of an ever-growing Federal bureaucracy.

To prove my point if proof be needed, I submit the following figures for the fiscal year 1958 which I am sure are reliable as they were furnished by a Member of Congress.

In the year 1958, the citizens of Maine contributed to the Federal treasury, the sum of $191,286,000 in Federal taxes. For the same year, the State of Maine received a total of $39,391,042 in Federal aid payments or $151,804,958 less than was collected from our people.

If these figures are representative of those of the other States it is quite obvious that the "cost of doing business" at the Federal level is more than the people can stand.

By the same token, it would appear that the people of the 70 Maine communities who are without public water systems, would get far more for their money if they spent it at the local level rather than subject it to the shrinking process of Washington "overhead."

Perhaps the water rates of the good people of Bowdoinham would be reduced from $80 per year to $60 if they had been able to borrow money at 2 percent from the Federal Government rather than the 4½ percent which they apparently had to pay but just what difference does it make to the individual if his water bill is lowered and his involuntary contributions to the Federal Treasury are increased correspondingly.

The Maine State Chamber of Commerce firmly believes that it is high time that the various and sundry agencies of the Federal Government ceased trying to make the people of this country believe that the philosophy of "something for nothing" is the backlog of a sound economy and we further believe that the time has come for the Federal Government to get out of the competition with its own citizens whether it be in the field of banking, manufacturing the growing of peanuts or any of the other 3,000 businesses presently being operated by the Federal Government.

In a brief span of time as the time of nations is measured, our country has constantly grown in stature until today we are the greatest Nation on the face of the earth with a standard of living for our people unequalled anywhere in the world.

All of this has been accomplished under the American system of free enterprise and until recently with a minimum of Government interference.

The Maine State Chamber of Commerce has in the past and will continue in the future to resist further governmental encroachment upon the sovereignty of the individual States and the constitutional rights of all of our citizens.

The CHAIRMAN. Thank you, Mr. Bishop.

Senator MUSKIE. Thank you, Leonard.

There is one other witness, Mr. Chairman, who is not on our list of witnesses.

We are fortunate to have present, as I indicated this morning, Gen. Alden K. Sibley, who is division engineer of the Corps of Engineers.

We would ask him to give us a briefing relative to the Passamaquoddy project. We have already had some discussion of that project today.

I would simply like to ask General Sibley if, in his judgment, there is additional information of a brief nature that he would give to the committee at this time which the committee might find useful.

STATEMENT OF BRIG. GEN. ALDEN K. SIBLEY, DIVISION ENGINEER, NEW ENGLAND, CORPS OF ENGINEERS

General SIBLEY. I am Brig. Gen. Alden K. Sibley, division engineer of the U.S. Army Corps of Engineers, Engineer Division, New England.

Senator Kerr, members of the select committee, Governor Clauson, Senator Muskie.

I am here in response to Senator Hart's letter of November 17, 1959, in which he asks General Itschner to see that the corps was represented at your hearing.

And I understand that General Itschner is having some reports prepared for your committee which will be presented on a worldwide or countrywide basis.

For this reason I have not asked to appear before the committee, and I have no statement to make but I will be more than glad to try to answer any questions the committee has today or in your hearings in Boston tomorrow.

The CHAIRMAN. Do you plan to be in Boston tomorrow?

General SIBLEY. Yes, sir.

The CHAIRMAN. Are there any questions from the members of the committee or from Senator Muskie?

Senator MUSKIE. I simply can ask this question.

Do you have any indication, General Sibley, of the timetable with respect to action by the International Joint Commission on the report of the engineering board of the Passamaquoddy project?

General SIBLEY. I cannot, of course, Senator Muskie, say when International Joint Commission will submit its findings to the Government on the terms of its report. I have been asked to prepare a rather detailed briefing for them for 3 days on the 13th, 14th, and 15th of January in Boston, and I understand that they intend to consider the report as expeditiously as they can.

I would only mention that this report has taken 3 years. It has involved about six Federal and Provincial agencies, numerous consulting engineers and groups, and has cost $3,300,000 to write.

It is an extremely thorough, very comprehensive report which, in itself is about 3 feet long, and it may take the IJC some considerable time to render a sound objective judgment to the Governments on it. I know that the dates of 13th, 14th, and 15th of January has been made public, however, sir.

Senator MUSKIE. Is there any indication as to whether or not there will be public hearings before the International Joint Commission arrives—before the decision?

General SIBLEY. I have heard the subject discussed, Senator Muskie. I do not know whether the IJC decided to do this or not.

My feeling is they have not decided one way or the other as yet.

Senator MUSKIE. What you said confirms my own impression. I hoped you might have had something more definite.

General SIBLEY. I am sorry I do not have anything more definite than that at the moment, sir.

The CHAIRMAN. It could not be more definite and as accurate.

Senator MUSKIE. With respect to the Quoddy report itself, Mr. Chairman, I concur with what is implicit in General Sibley's remarks and that is that is a subject by itself that we could not hope to go into in detail this afternoon. I am sure all of us will have an opportunity subsequently to study it.

Thank you, General Sibley, very much for being here.

That concludes with the list of witnesses, Mr. Chairman. This list was made up of people who responded to a public invitation to testify, asking the opportunity to do so.

So far as I know, it is a complete list.

The CHAIRMAN. Does the Governor have any further remarks?

Governor CLAUSON. I want to thank you for being with us.

Senator MUSKIE. I want to thank the committee for coming here and the people who have taken part in this hearing today. It has brought to the committee without a doubt our real feeling.

The CHAIRMAN. Senator Hart?

Senator HART. It has been a very good day.

The CHAIRMAN. Senator Moss?

Senator MOSS. An excellent hearing, Mr. Chairman.

I think we gathered a lot of information here today that we will have to integrate with the things we gathered from other parts of the country. I think it has been an excellent hearing. It certainly has been well received.

The CHAIRMAN. It has been an interesting hearing as evidenced by the fact that now, after something over 6 hours, the room is still two-thirds full, and the committee is still fully alert. It has been a very comprehensive hearing, a compliment to you, Senator Muskie, and the people of Maine.

There have been many viewpoints expressed here and many viewpoints have been called for but left unexpressed. That has been interesting too.

I do not know of any place where the committee has learned any more, not only from what has been said, but from what has not been said. We are tremendously happy to have been here. You made a great contribution to the work of this committee. You have evidenced an alert and progressive citizenship, sustained not only by the desire for betterment of your State and your country but also stimulated by very basic differences of opinion which in the American way of life are always healthy and when vigorously pursued surely come out with about the right answer.

Senator MUSKIE. Thank you, Mr. Chairman.

(Whereupon, at 3:40 p.m., Monday, December 7, 1959, the committee recessed.)

(Subsequent to the closing of the hearing the following letter was received for inclusion in the record.)

ASSOCIATED INDUSTRIES OF MAINE,
Augusta, Maine, January 13, 1960.

Hon. ROBERT S. KERR,
Senate Office Building,
Washington, D.C.

DEAR SENATOR KERR: With regard to the hearing held in Augusta, Maine, on December 7, 1959, by a select committee of the U.S. Senate Committee on National Water Resources, this association respectfully requests to have included in the records this statement setting forth some observations and comments. It is our understanding that such a statement is in order if filed on or before January 15, 1960.

It is difficult in the formulating of a statement of this type in the manner to avoid some repetition; therefore, it is hoped that the committee will be tolerant in this respect and understand that our primary purpose is an endeavor to present some points which were seemingly overlooked, and to give more emphasis to some which may have been made but which seem to have fallen into more or less routine channels.

WATER POLLUTION

In the area of water pollution, we should like to emphasize that the technical secretary of the State's water improvement commission expressed belief that this State was at the threshold of making real progress in effecting cleaner waters; and he further expressed confidence that the next decade would produce still better results.

In addition, it should be remembered that this official reported industries as having effected numerous improvements through embarking into various by-product fields, changed processes and better housekeeping, generally. The new processes, it was estimated, have lightened the pollution load some 15 percent

to 20 percent. Improved housekeeping methods have added to this percentage, but in an amount difficult to estimate.

Other significant points mentioned by the commission's technical secretary included:

1. His statement to the effect that securing action directed toward solving the municipal sewage problem was proving much more difficult than was securing action by industry to abate industrial wastes.

2. His statement that Maine citizens, as a whole, have exhibited a much better and more rational understanding of the pollution problem and abatement program in the past 3 or 4 years.

3. His statement that industry has for some time been working on plans for stream improvement, and that numerous industries have already put their plans into operation.

We believe it pertinent to recall that, mileagewise, about 92 percent of Maine's lakes, streams, and rivers are now completely classified, this having been accomplished by the Maine Water Improvement Commission in the very short time of only 6 years, and further respectfully invite attention to the fact that in classifying the streams, the State of Maine now has 23,700 miles, or 72 percent of our streams of a quality suitable for bathing and for human consumption after limited to moderate treatment, and 29,500 miles, or 89 percent of the streams are capable of supporting healthy fish life.

We further invite attention to the following facts:

(1) Waste such as sawdust, shavings, etc., from woodworking plants has virtually been removed from Maine streams.

(2) Progress in lagooning cannery waste, together with new industrial discharges through licensing, has been held to a point where such wastes do not interfere with existing water uses.

(3) Definite progress is evidenced in the use of spent potato pulp to prevent it from being a pollutant from the potato starch industry.

(4) Pilot plants for study of changes for purposes of lightening pollution loads are now being operated by several industries.

(5) Many of the pulp and paper companies in the State within the past 2 years have announced programs for stream improvement, most of these programs having already moved from the blueprint to the operational stage, with many millions of dollars of expenditures represented. As a result of industry's activities in this respect, the pollution load of this industry, so important to Maine's economy, will have been reduced by 27 percent since 1954 while production has been increased by about 30 percent.

(6) With the public support of industry, among others, the appropriational budget for the State's water improvement commission has been increased some 500 percent in the past decade.

(7) The sea and shore fisheries commissioner testified that shellfish were being injured by municipal sewage waste (of which only 3 percent is now treated) and not by industrial waste.

FORESTRY AND FORESTRY TAXES

Among other testimony given at this hearing was that of the State forestry commissioner who told of the tremendous areas of Maine covered with forest growth (wild lands), citing that these forests retained a large percentage of groundwaters, thus minimizing the threat of flood, etc. He also testified that the annual growth of Maine forests exceeded the annual cutting thereof, and explained the Maine Forestry District and the Maine Forestry District tax which was instituted at the instigation of the landowners and which is devoted to fire protection and control in the unorganized townships. He stated that this was the only tax on lands in the forestry district.

It seems pertinent to include in this statement the fact that the forestry district tax, however, is not the only tax paid on these forest lands. The owners in the district pay many taxes in addition. They pay the State property tax, for example, which is fixed by the legislature, and which is presently at a rate of 7¼ mills of State valuation. These landowners also pay county taxes imposed at the county level, and if there are any schools or roads in the township they also pay school taxes and road taxes.

A further part of industry's contributions to the preservation of the water resources of Maine is evidenced by the voluntary control program on spruce bud worm to preserve the forest cover of the State. Landowners in Maine, upon

advice of the forest commissioner, sponsor voluntarily the spraying for this pest and assess themselves 37½ percent of the cost with the State paying an equal share and Federal Government paying the balance. This will increase the tax in 1960 by 75 cents per $1,000 of valuation—an impressive tax load with definite value in the preservation of our forest and our water resources.

In return for these substantial taxes paid on these lands over and above the forestry district tax, it should be pointed out that practically no services are rendered at any level of government, whereas, in the organized towns and municipalities many services are rendered in return for taxes paid.

CONCLUSION

Maine is naturally endowed with an abundant water supply and because of of its low population and low industrial concentration is in a unique and very favorable position when compared to the water resources problems of other States.

As pointed out above, the legislature and regulatory bodies of the State working closely with industry have made substantial progress in the elimination of stream pollution and enhancement of the State's water resources.

We respectfully urge your committee to sponsor no Federal action in this field, but leave this matter for continued successful development on a State level.

Very truly yours,

B. MORTON HAVEY,
Executive Director.

STATE OF MAINE,
SENATE CHAMBER,
Augusta, January 29, 1960.

Senator ROBERT S. KERR,
Senate Office Building, Washington, D.C.

DEAR SENATOR KERR: I am sorry that I was unable to attend the public hearing held by your committee in Augusta, due to being out of the State on business.

Having been concerned with the water conservation problem in our State for the last 20 years, and being currently the chairman of our legislative natural resources committee, which considers water classification matters, I am well informed of current water pollution conditions in this State.

I have noted a recent Associated Press account entitled "Associated Industries of Maine Cites Curtailment of Pollution," which is taken by the Associated Press from a letter directed to you written by B. Morton Havey, of Augusta, the Associated Industries executive director. In this account it is stated that papermill wastes are being reduced by 27 percent, while production is rising 30 pe cent. I would like to say that I have some reason to doubt the validity of these figures and would suggest that a more accurate appraisal of papermill waste treatment results might be obtained from our Maine Water Improvement Commission engineer, Raeburn MacDonald.

Mr. Havey's statement further suggests that 92 percent of Maine's mileage of lakes and streams, etc., has been classified in a relatively high rating, and further that 72 percent of the total mileage of streams is suitable for bathing and human consumption with moderate treatment. In reply to these last remarks I probably scarcely need to remind you, Senator Kerr, that this State still comprises a vast network of wilderness, streams, and lakes, which are obviously unpolluted due to their remote location and lack of settlement.

These are the type of misleading statements which we have learned to expect over the years from the Associated Industries of Maine and their executive director, B. Morton Havey. I am sure that your committee is well able to make an objective and advantageous appraisal of the water conservation problems of this State, and that you will continue your good record of efforts to conserve and properly utilize these very vital natural resources.

Cordially yours,

EZRA JAMES BRIGGS,
Senator, Aroostook County.

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